08-4/2/v.3/sec.1

Veterans Administration

Standard Details
Mechanical Engineering
Plumbing & Sanitary

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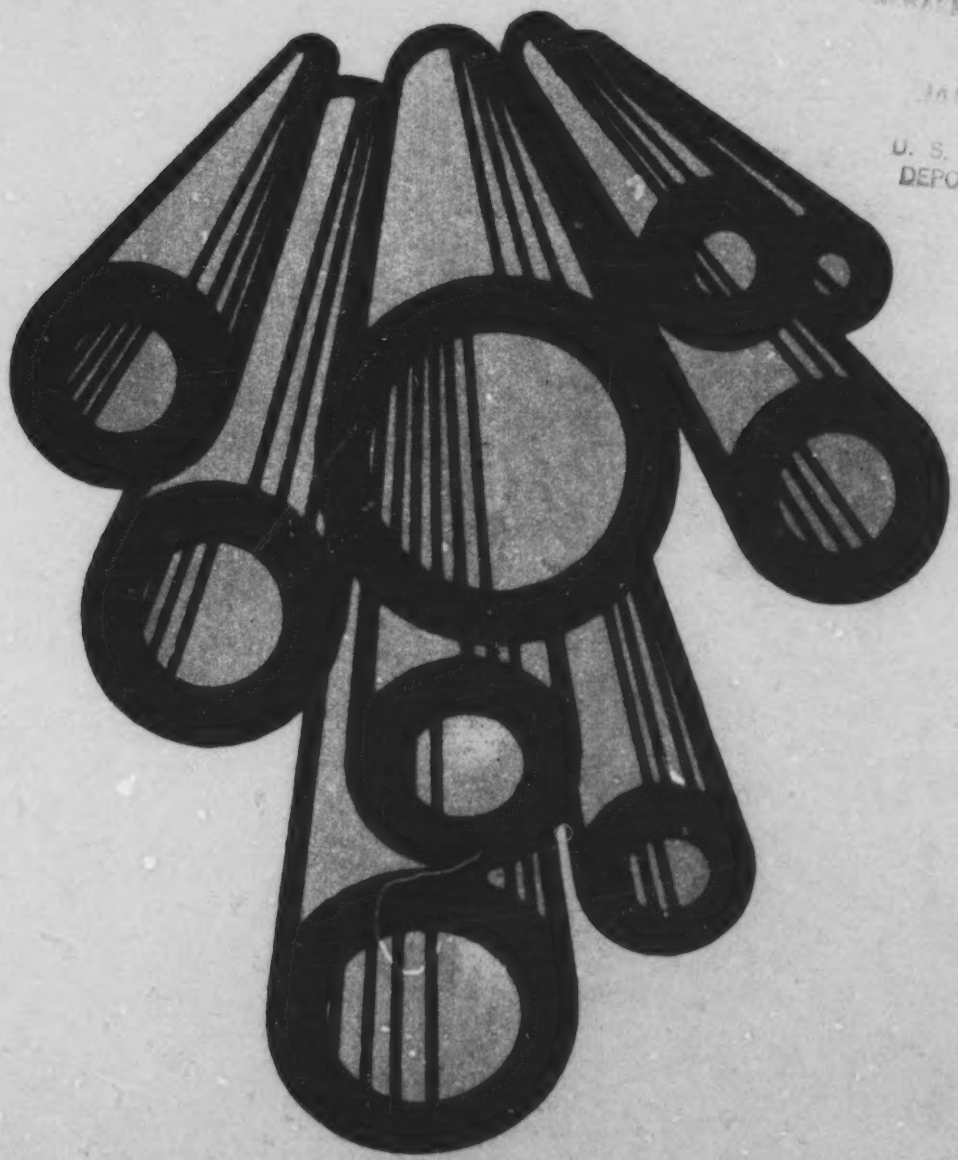


H-08-4
Volume 3
Section 1

Office of Construction
Washington DC 20420

PLUMBING GENERAL NOTES

THE FOLLOWING NOTES APPLY, EXCEPT WHERE OTHERWISE INDICATED:

1. ROOF DRAIN SHALL BE SAME SIZE AS DOWNSPOUT.

2. MAKE WATER CONNECTIONS TO FIXTURES ABOVE FLOOR, WHERE POSSIBLE.

3. CONNECT EACH HOT WATER RETURN CIRCULATION RISER TO HOT WATER RISER BEFORE TAKE-OFF FOR LAST FIXTURE.

4. CONTRACTOR SHALL BALANCE HOT WATER SYSTEM.

5. WATER LINE DRAIN SHALL BE 3/4" VALVE WITH HOSE CONNECTION.

6. ALL PIPE THRU FOOTINGS SHALL HAVE CAST IRON SOIL PIPE SLEEVE WHICH EXTENDS FULL WIDTH OF FOOTINGS.

7. PROVIDE ACCESS PANELS IN PLASTER CEILINGS FOR VALVES, WATER FLOW SWITCHES, AND OXYGEN LOW PRESSURE ALARM SWITCHES.

8. PLUMBING STACKS AND CORRESPONDING DIAGRAMS ARE INDICATED THUS: -15

9. SUPPLY TO AIR, VACUUM, AND OXYGEN OUTLETS, OTHER THAN PBPU UNITS, SHALL BE 1/2". SUPPLY TO PBPU UNITS SHALL BE AS INDICATED ON PLANS.

10. WASTE PIPE FROM STERILIZERS, AND KITCHEN AND REFRIGERATED EQUIPMENT WHICH DISCHARGE TO FLOOR DRAINS, SHALL HAVE MINIMUM AIR GAP OF TWICE WASTE PIPE DIAMETER.

11. EXPOSED EXISTING PIPING, NOT TO REMAIN IN USE, SHALL BE REMOVED. DISCONNECT ABANDONED WATER PIPING FROM DISTRIBUTION SYSTEM.

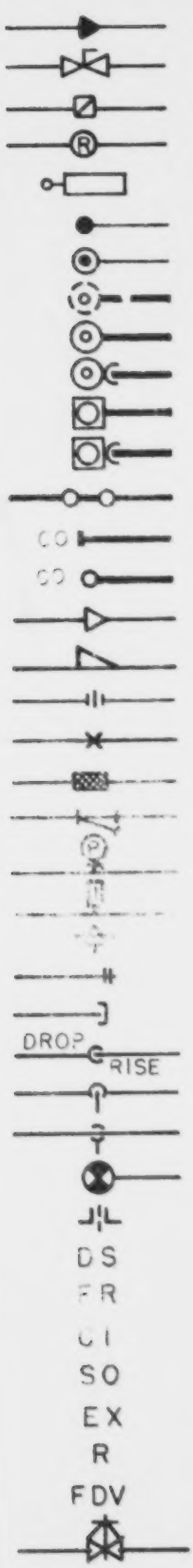
12. LIGHT LINES INDICATE EXISTING PIPING TO REMAIN: HEAVY LINES INDICATE NEW PIPING.

13. SEE ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR COMPLETE P.B.P.U. DETAILS.

14. FOR WHEELCHAIR LAVATORY DRINKING FOUNTAIN & SHOWER ROUGH-IN PLUMBING, SEE ARCHITECTURAL DRAWINGS.

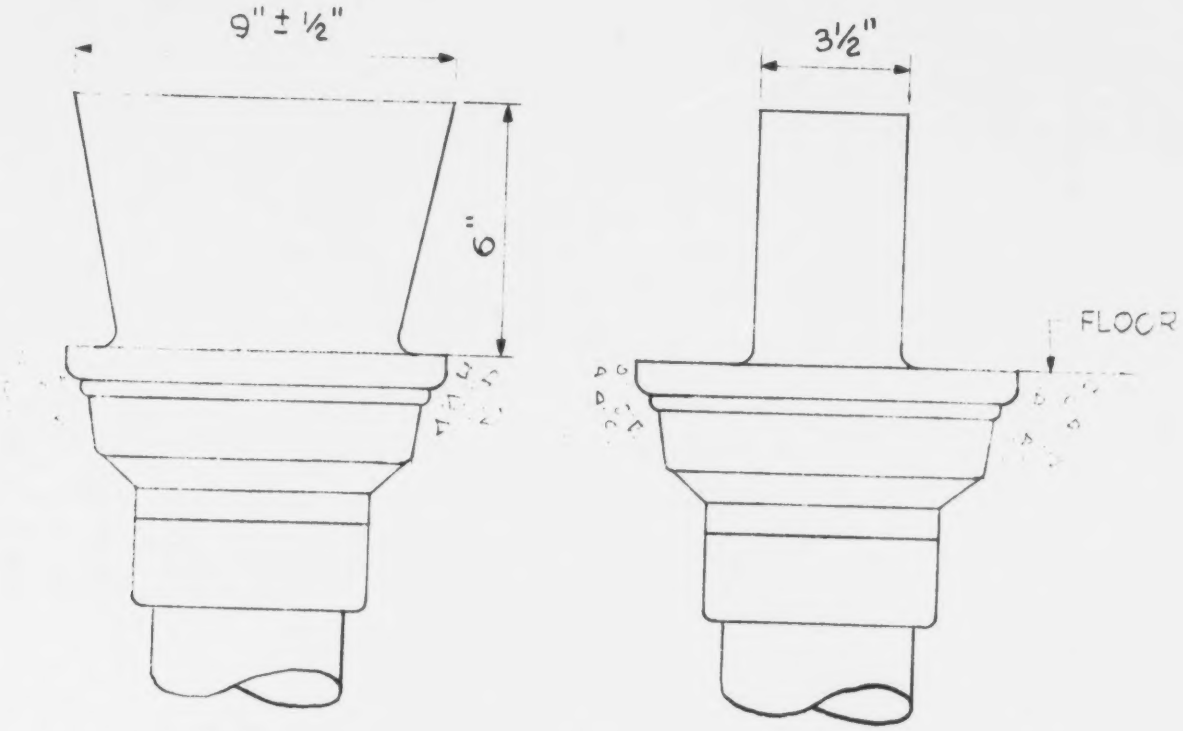
PLUMBING SYMBOLS

———	SOIL AND OR WASTE PIPE (SP) OR (WP)
- - - - - - - -	VENT PIPE (V)
—— — ——	STORM PIPE (ST)
——CRP——	CHEMICAL RESISTANT PIPE (CRP)
——— - ———	COLD WATER PIPE (CW)
——— — — —	HOT WATER PIPE (HW)
——— - - - ———	HOT WATER RETURN CIRCULATION (HWRC)
——TW——	TEMPERED WATER (TW)
——I——	ICE WATER (IW)
—IWRC—	ICE WATER RETURN CIRCULATION (IWRC)
——F——	FIRE LINE (FL)
——FS——	FIRE SPRINKLER LINE (FS)
——G——	GAS PIPE (G)
——MA——	MEDICAL AIR (MA)
——LA——	LABORATORY AIR (LA)
——DA——	DENTAL AIR (DA)
——SA——	SHOP AIR (SA)
——MV——	MEDICAL VACUUM (MV)
——LV——	LABORATORY VACUUM (LV)
——OE——	ORAL EVACUATION (OE)
——O——	OXYGEN (OX)
——NO——	NITROUS OXIDE (NO)
——N——	NITROGEN (N)
——DW——	DISTILLED WATER (DW)
——DE——	DEIONIZED WATER (DE)
——RO——	REVERSE OSMOSIS (RO)
---ATV---	ATMOSPHERIC VENT (ATV)
——PD——	PUMP DISCHARGE LINE (PD)
——FOS——	FUEL OIL SUPPLY (FOS)
——FOR——	FUEL OIL RETURN (FOR)
---FOV---	FUEL OIL VENT (FOV)
——SR——	SILVER RECOVERY (SR)
	GATE VALVE
	GLOBE VALVE
	ANGLE VALVE
	CHECK VALVE
	AUTOMATIC GAS SHUT OFF VALVE
	PRESSURE-TEMPERATURE RELIEF VALVE
WS	WATER FLOW SWITCH
	VALVE IN RISER
	FIRE DEPARTMENT CONNECTION



BACKFLOW PREVENTOR
GAS VALVE
COMBINATION BALANCING & SHUT OFF VALVE
RELIEF VALVE
FIRE APPARATUS CABINET (FAC)
SPRINKLER HEAD - UPRIGHT
SPRINKLER HEAD - PENDANT
ROOF DRAIN (RD)
ROUND OPEN SIGHT DRAIN (ROSD)
ROUND OPEN SIGHT DRAIN WITH "P" TRAP
FLOOR DRAIN (FD)
FLOOR DRAIN WITH "P" TRAP
RUNNING TRAP
CO CLEANOUT EXPOSED
CO CLEANOUT IN FLOOR
CONCENTRIC INCREASER
ECCENTRIC INCREASER
UNION
PIPE ANCHOR
EXPANSION JOINT
STRAINER
PRESSURE GAUGE WITH COCK
THERMOMETER
AUTOMATIC AIR VENT
WALL HYDRANT - P-801
CAP OR PLUG
DROP RISE DROP OR RISE
CONNECT OUT OF TOP
CONNECT OUT OF BOTTOM
NEW CONNECTION TO EXISTING
VTR VENT THRU ROOF (VTR)
DS DOWN SPOUT
FR FIRE RISER
CI CAST IRON
SO SIDE OUTLET
EX EXISTING
R RELOCATE
FDV FIRE DEPARTMENT VALVE
OUTSIDE SCREW & YOKE VALVE (O S & Y)

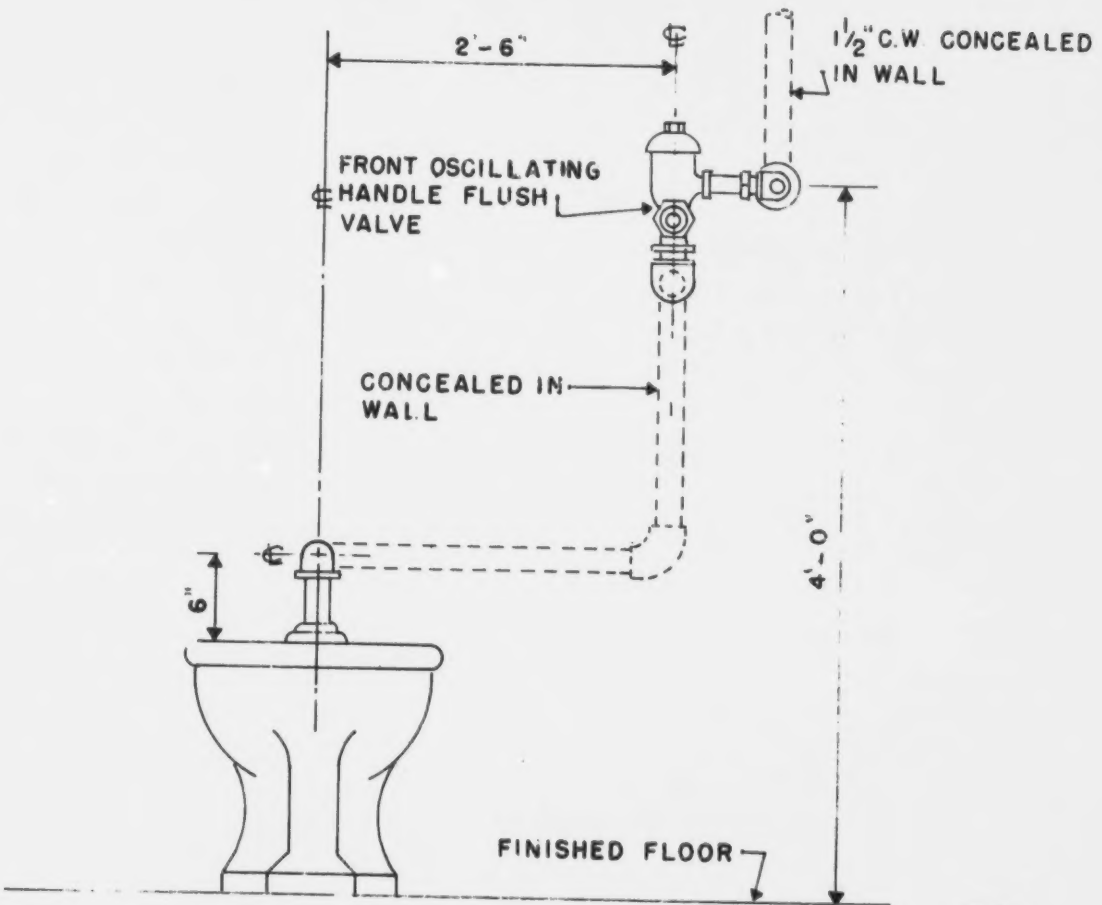
4-83 302-



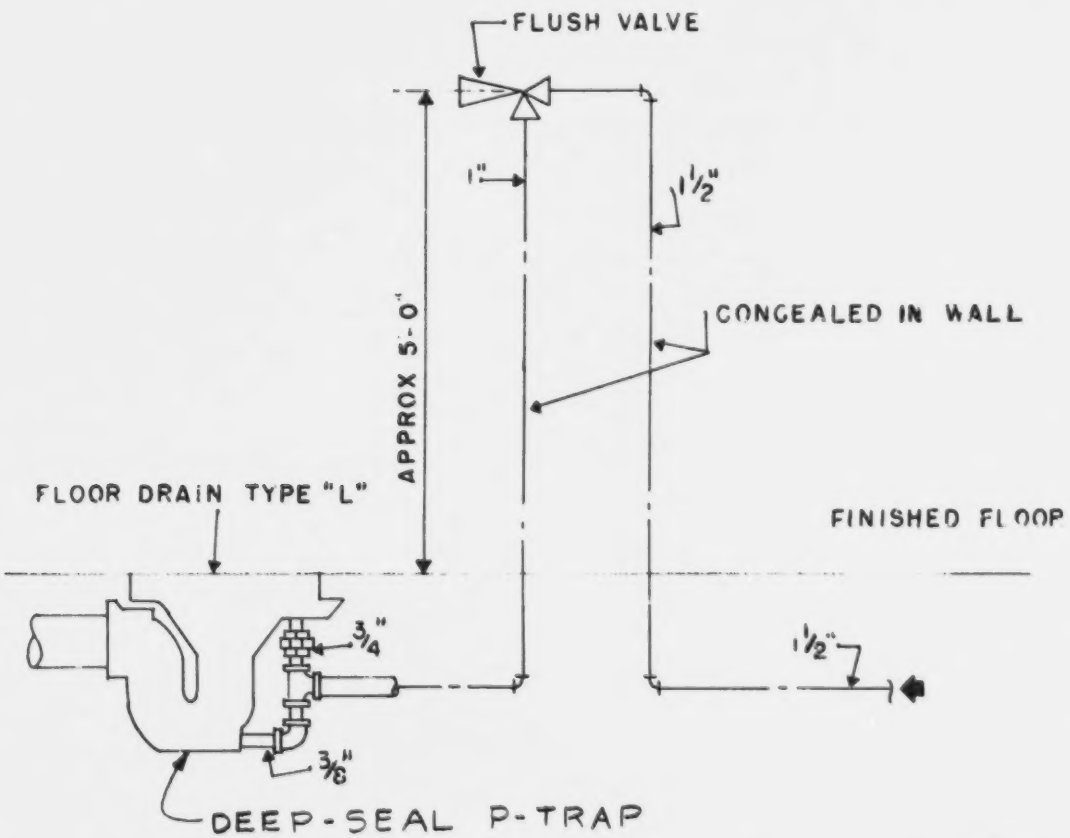
FLOOR DRAIN WITH OVAL FUNNEL

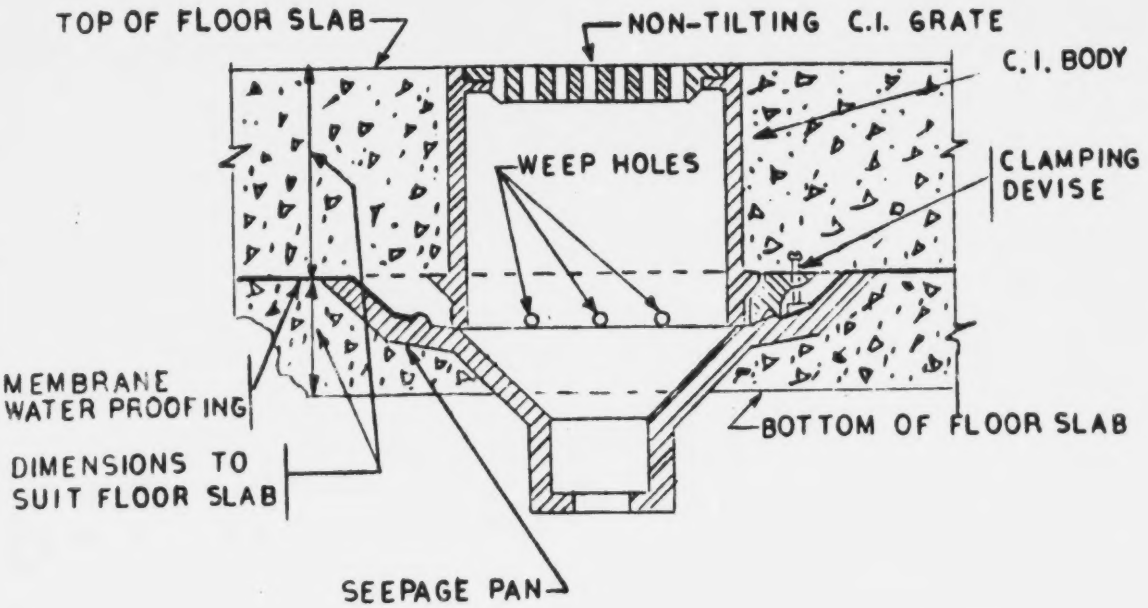
NOT TO SCALE

FLUSH VALVE FOR P-506



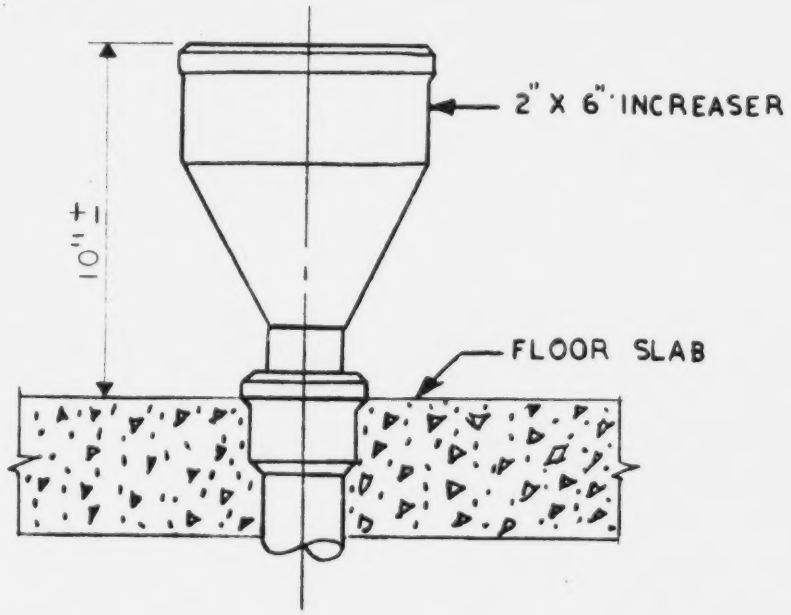
FLUSHING RIM FLOOR DRAIN





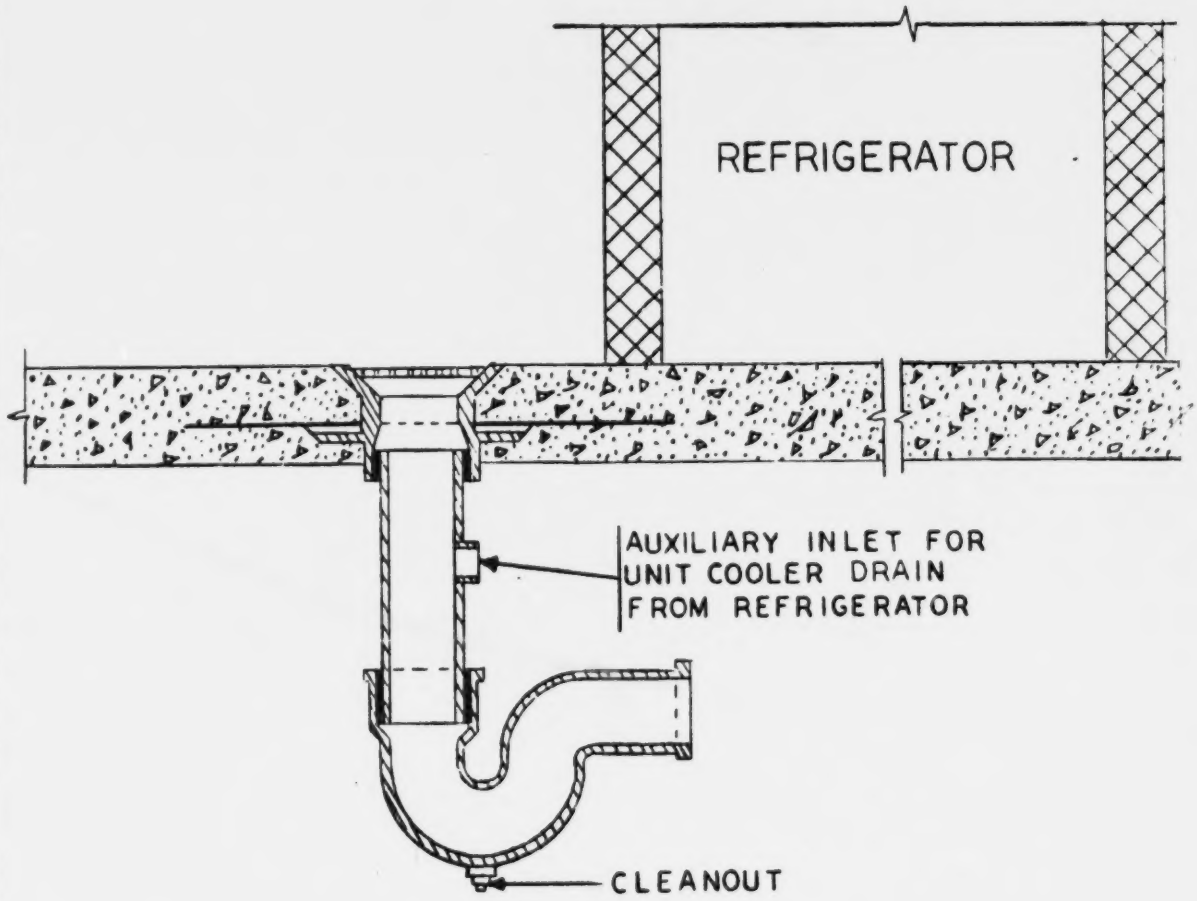
DETAIL OF FLOOR DRAIN WITH EXTENSION
NOT TO SCALE

NOTE: LOCATE DRAIN AS
REQUIRED BY EQUIPMENT

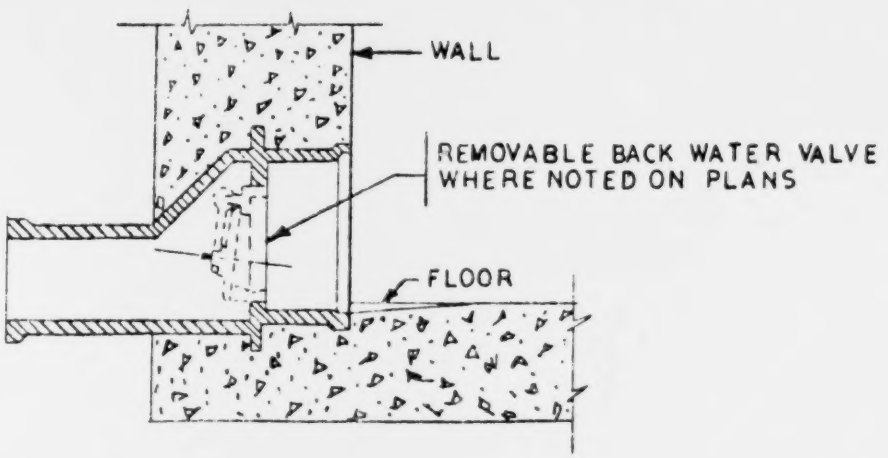


ROUND OPEN SIGHT DRAIN

NOT TO SCALE



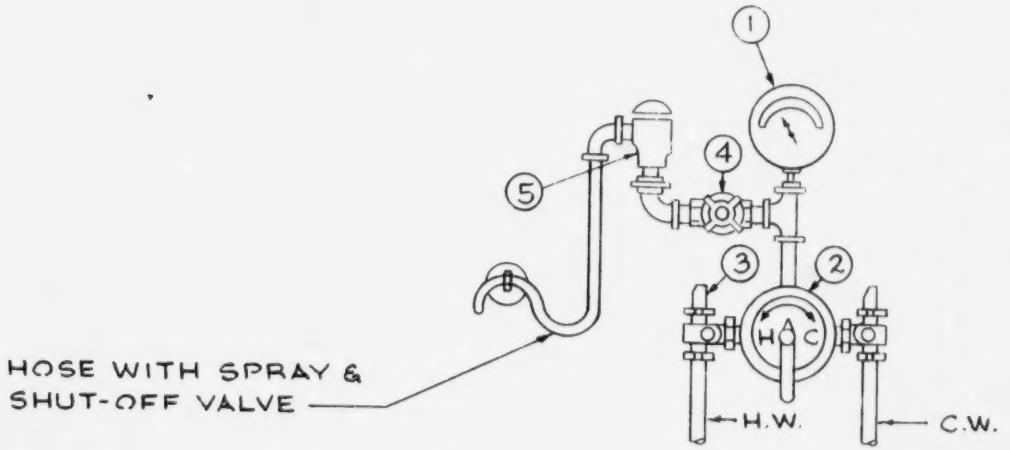
FLOOR DRAIN WITH AUXILIARY INLET
NOT TO SCALE



SIDE WALL DRAIN DETAIL
NOT TO SCALE

4-02

309



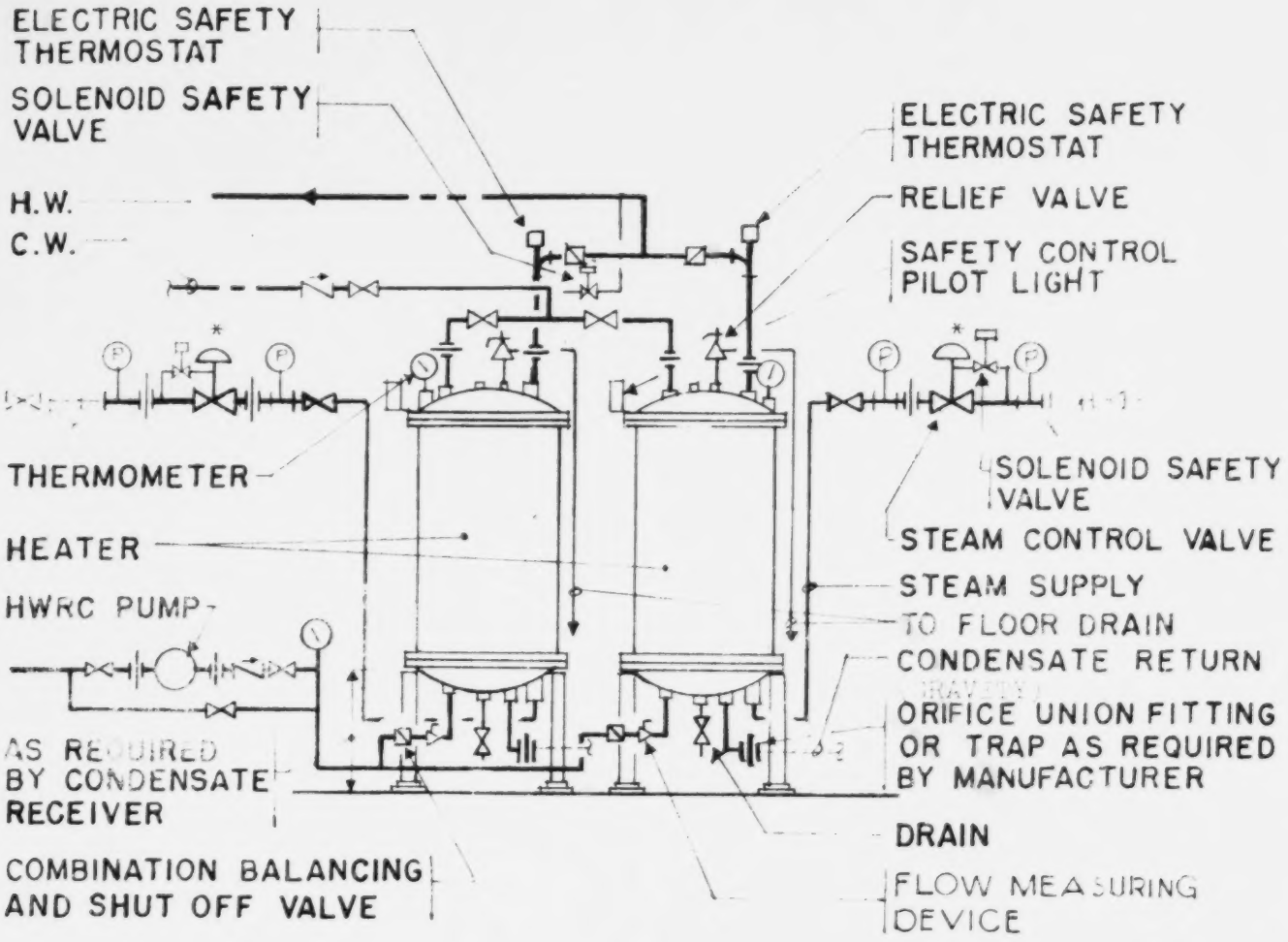
ITEM	NAME OF PART
①	DIAL THERMOMETER
②	THERMOSTATIC TEMPERATURE CONTROL VALVE
③	LOCK SHIELD UNION ANGLE CHECK STOP WITH REMOVABLE STRAINER
④	VOLUME CONTROL SHUT-OFF VALVE
⑤	VACUUM BREAKER

THERMO VALVE FOR AIDE-A-BATH (P-705)

NOT TO SCALE

4-83

311



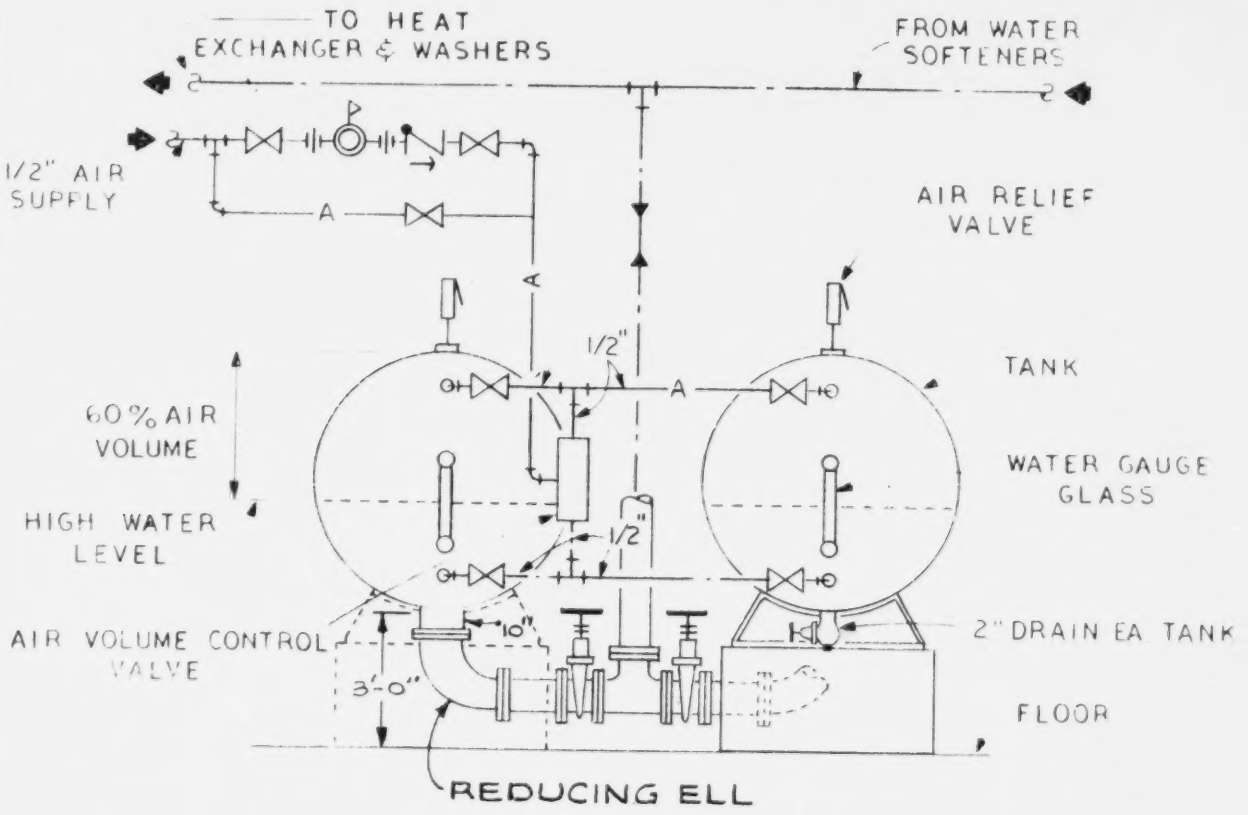
NOTES

1. EACH HEATER SHALL HEAT ___ GPM FROM ___ TO 120° F.
2. LOCATE VALVES AND UNIONS AS REQUIRED FOR MAINTENANCE
3. COORDINATE WITH MECHANICAL DESIGNER TO INSURE GRAVITY CONDENSATE DRAINAGE.
4. * INSTALL CONTROL VALVE 6" TO 12" ABOVE BOTTOM FLANGE OF HEATER.

PIPING ARRANGEMENT FOR HEATERS WITH VERTICAL COILS (SHELL AND STEAM COIL HEATERS)

NOT TO SCALE

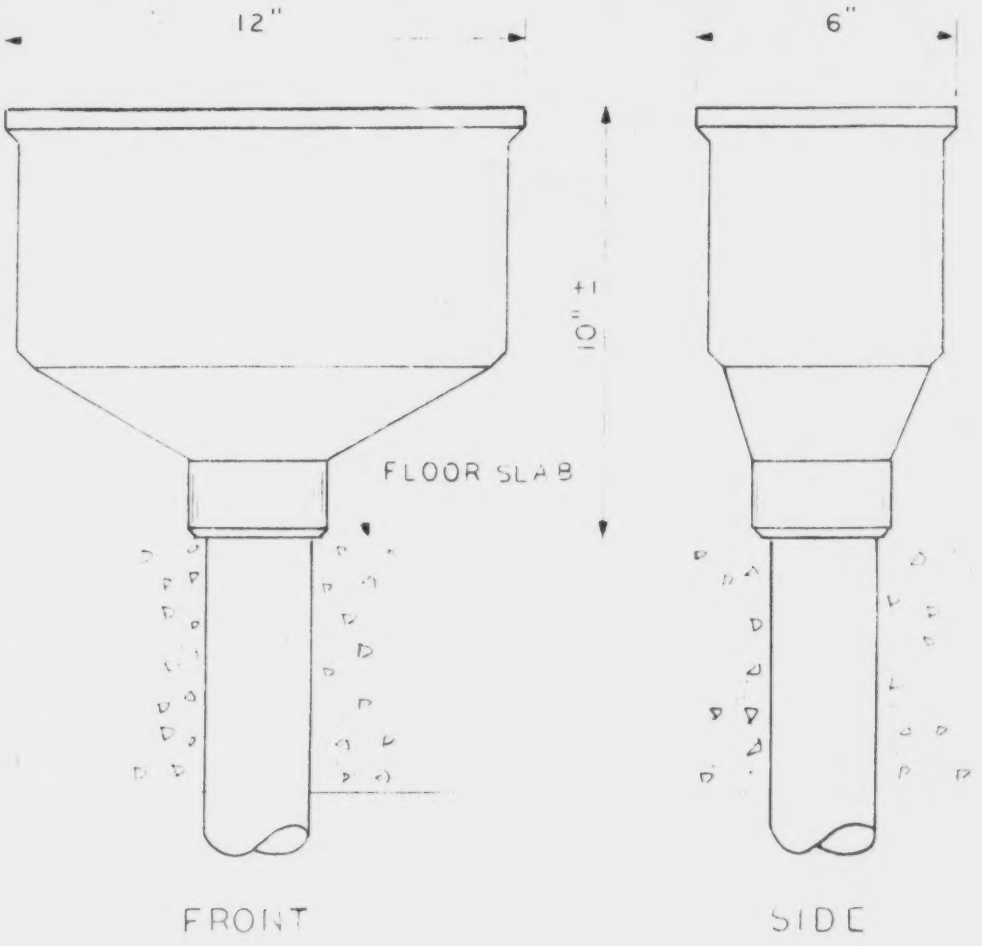
4-83 314



PNEUMATIC PRESSURE TANK DIAGRAM

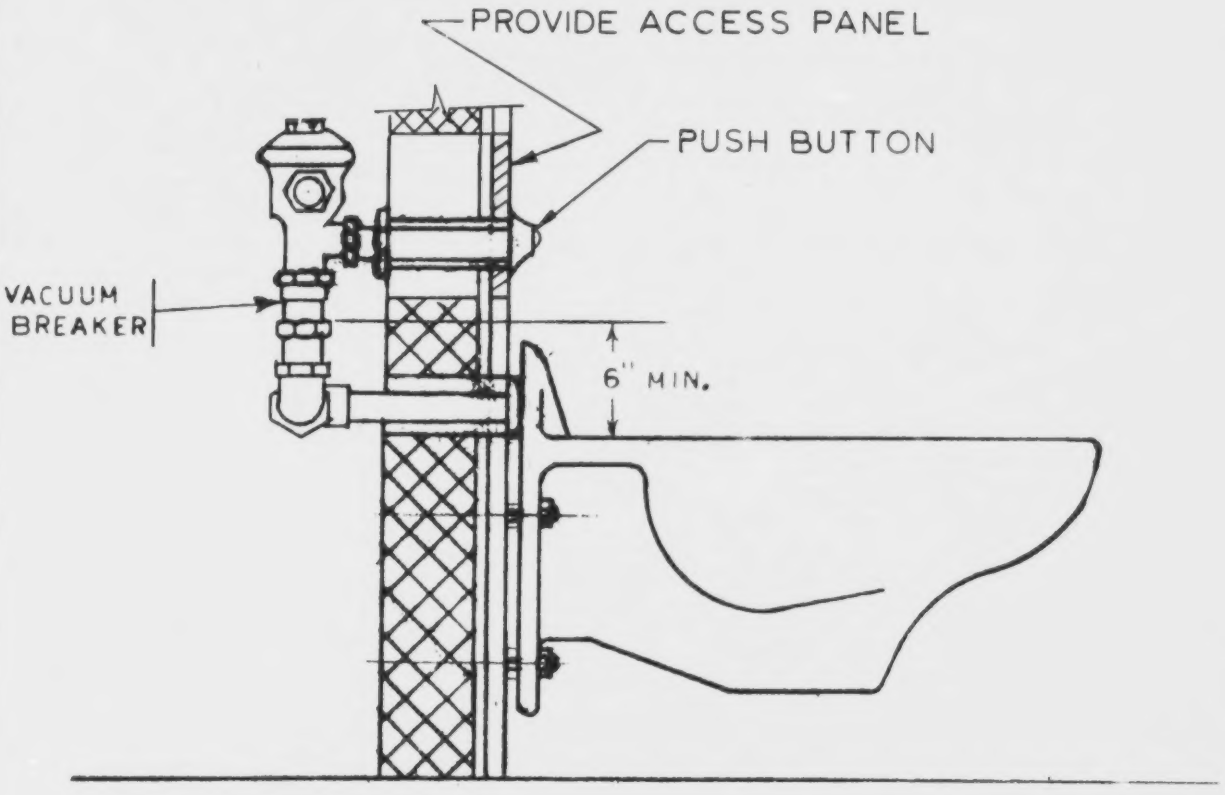
NOT TO SCALE

NOTE: LOCATE DRAIN AS REQUIRED BY EQUIPMENT.



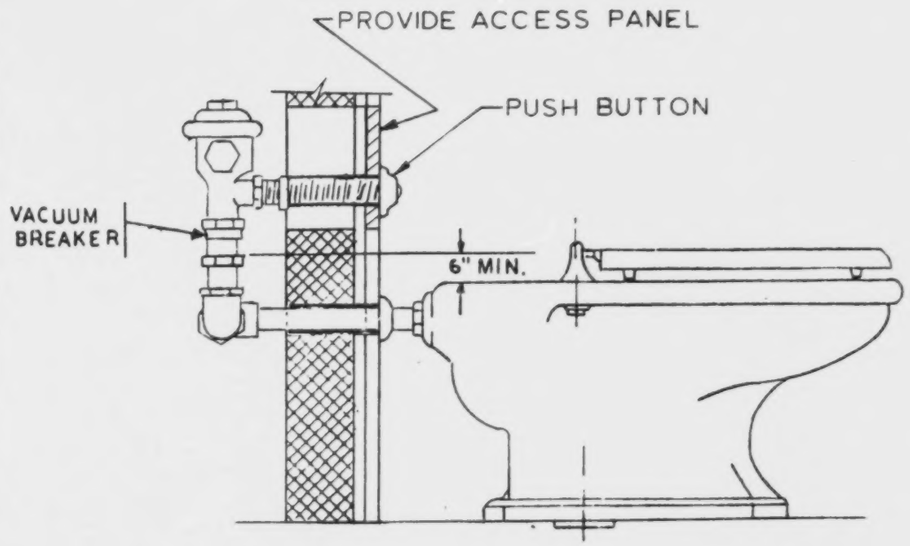
RECTANGULAR OPEN SIGHT DRAIN

NOT TO SCALE



DETAIL OF CONCEALED FLUSH VALVE FOR P-107

NOT TO SCALE

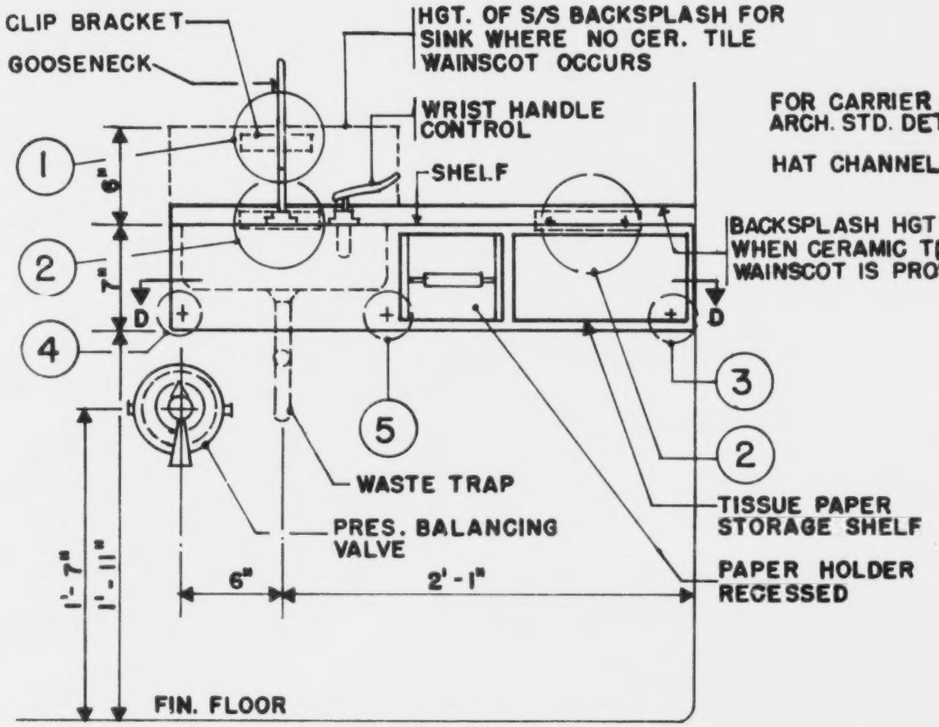


DETAIL OF CONCEALED FLUSH VALVE FOR P-108

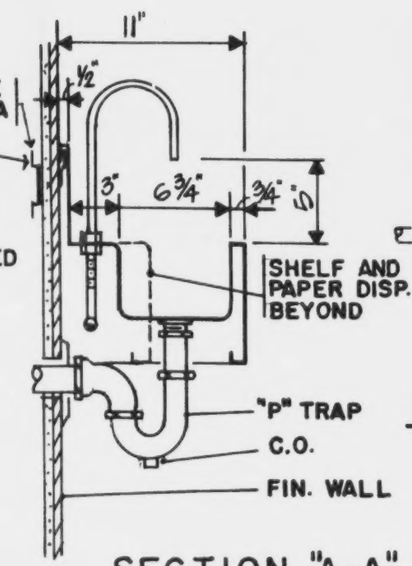
NOT TO SCALE

4-83

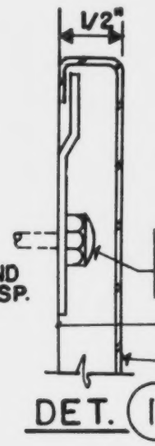
322



ELEVATION
SCALE: 1 1/2" = 1'-0"



SECTION "A-A"
SCALE: 1 1/2" = 1'-0"



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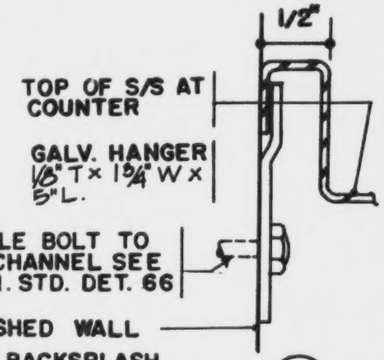
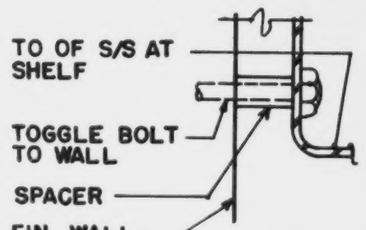
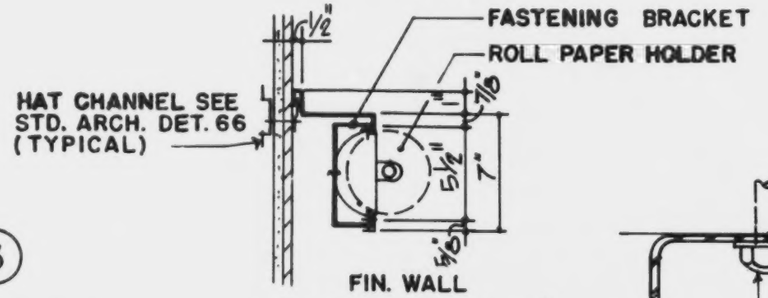


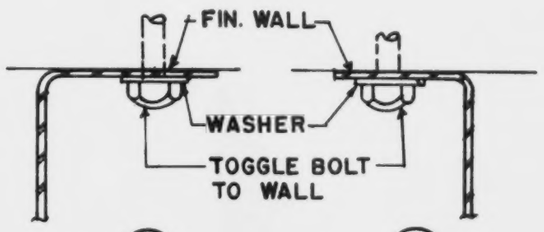
DET. (2)



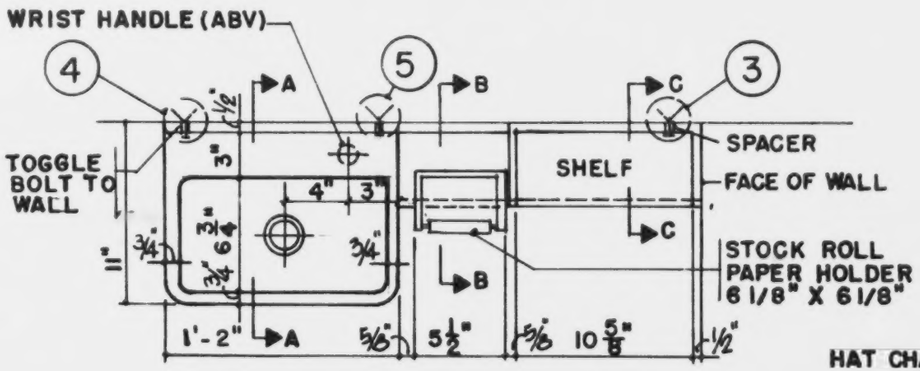
DET. (3)



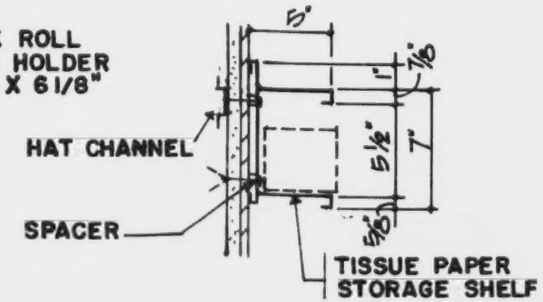
SECTION "B-B"
SCALE: 1 1/2" = 1'-0"



DET. (4) DET. (5)



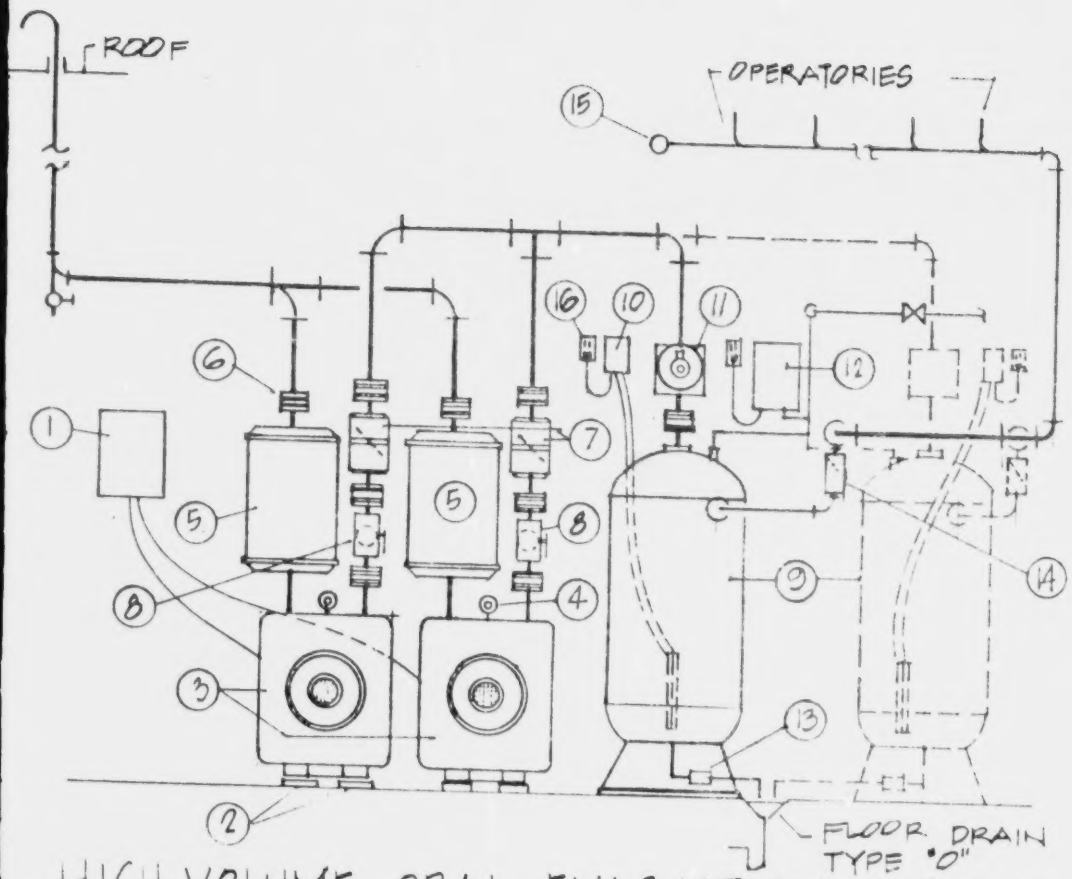
PLAN SECTION "D-D"
SCALE: 1 1/2" = 1'-0"



SECTION "C-C"
SCALE: 1 1/2" = 1'-0"

NOTE:
PROVIDE SEALANT AT ALL LOCATIONS WHERE UNIT ABUTS WALL SURFACE. (SEE ARCHITECTURAL SPEC.)

SELF-CARE TOILET FOR SPINAL CORD INJURY USE (P-523)
SCALE: AS NOTED



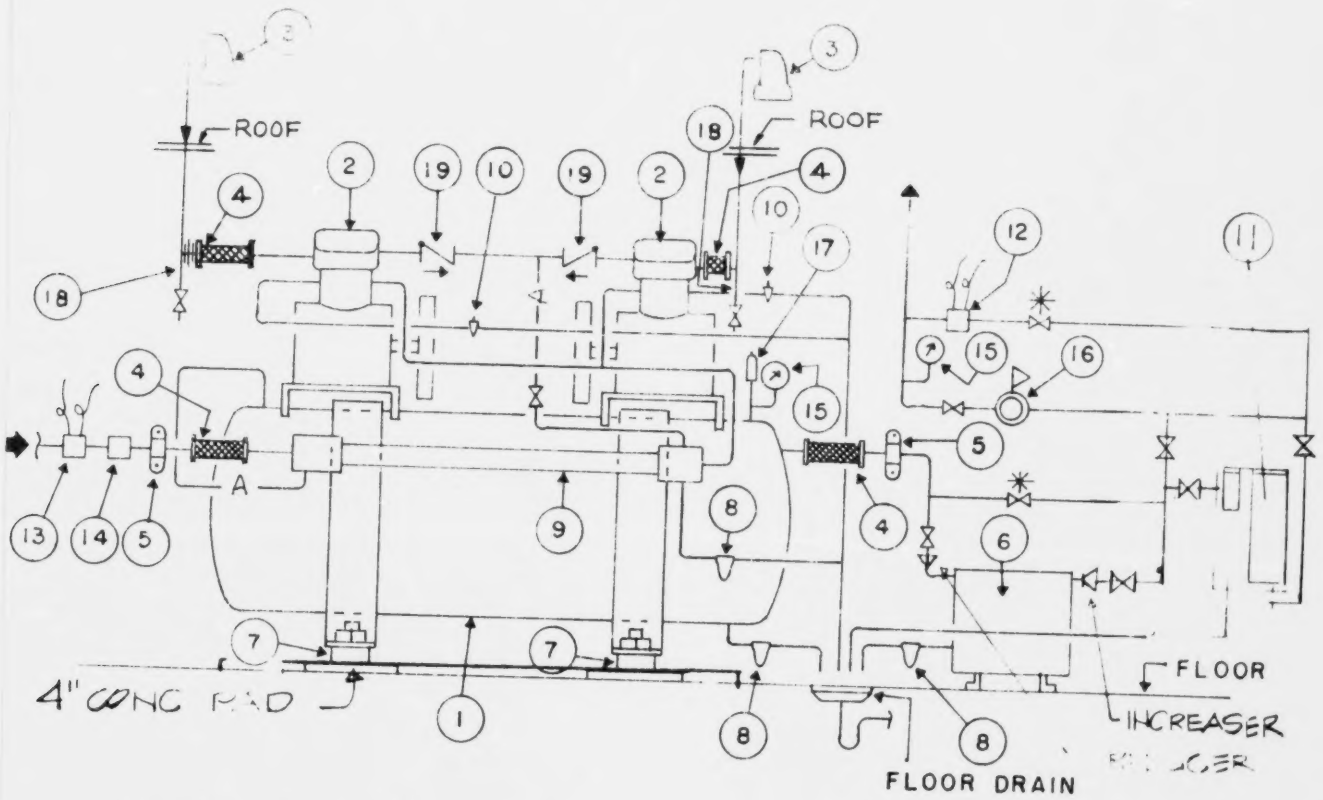
HIGH-VOLUME ORAL EVACUATION SYSTEM

1	DUPLEX ELEC. CONTROL PANEL
2	ISOLATOR PAD
3	VACUUM PRODUCER
4	ANTI-SURGE VALVE
5	DISCHARGE SILENCER
6	FLEXIBLE PIPE ISOLATORS
7	DIRECTIONAL FLOW CHECK VALVE
8	INGESTION VALVE
9	SEPARATOR
10	LIQUID LEVEL SENSOR
11	SOLENOID VALVE
12	AUTO-FLUSH ASSEMBLY
13	CHECK VALVE
14	DIRECTIONAL FLOW VALVE
15	VACUUM RELIEF VALVE
16	ELECTRICAL RECEPTACLE

MEDICAL AIR COMPRESSORS

1. AIR RECEIVER
2. AIR COMPRESSOR
3. AIR INTAKE FILTER
4. FLEXIBLE CONNECTOR
5. ANCHOR TO BLDG. STRUCTURE
6. AIR DRIER-REFRIGERATION TYPE
7. VIBRATION ISOLATOR
8. AUTOMATIC CONDENSATE TRAP
9. AFTER COOLER (WATER COOLED)
10. NEEDLE CONTROL VALVE
11. PURIFICATION SYSTEM
12. LOW PRESSURE ALARM SWITCH
13. SOLENOID VALVE
14. BACKFLOW PREVENTOR
15. PRESSURE GAGE (0 100PSI)
16. PRESSURE REDUCING VALVE
17. RELIEF VALVE
18. DRIP LEG & DRAIN VALVE
19. SILENT CHECK VALVE, SPRING LOADED NON SLAM TYPE

✳ NORMALLY CLOSED

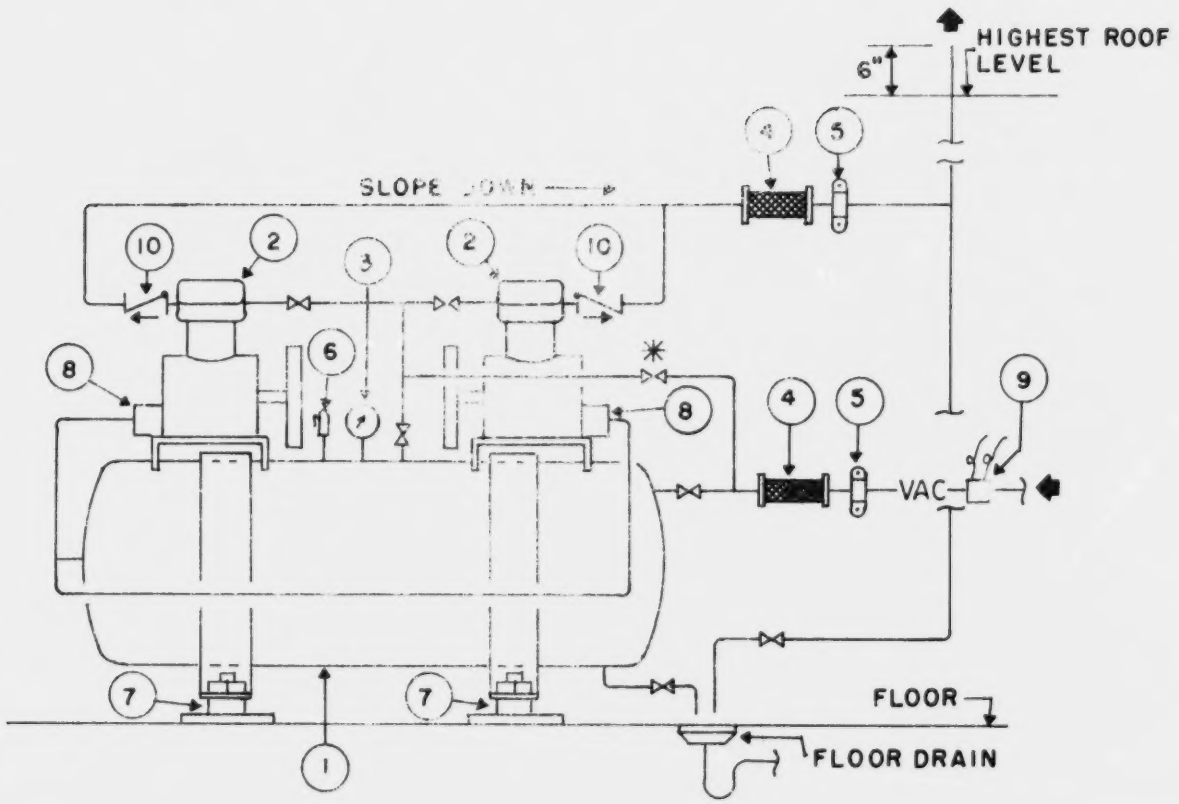


CONTROL SETTINGS

FIRST COMPRESSOR START	70 PSIG
SECOND COMPRESSOR START	65 PSIG
BOTH COMPRESSORS STOP	80 PSIG
PRV SET.	55 PSIG

MEDICAL VACUUM PUMPS

(1) VACUUM TANK
(2) VACUUM PUMP
(3) VACUUM GAGE (0-30" HG)
(4) FLEXIBLE CONNECTION
(5) ANCHOR TO BLDG STRUCTURE
(6) RELIEF VALVE
(7) VIBRATION ISOLATOR
(8) VACUUM SWITCH
(9) LOW VACUUM ALARM SWITCH
(10) SILENT CHECK VALVE - SPRING LOADED NON SLAM TYPE
✳ NORMALLY CLOSED

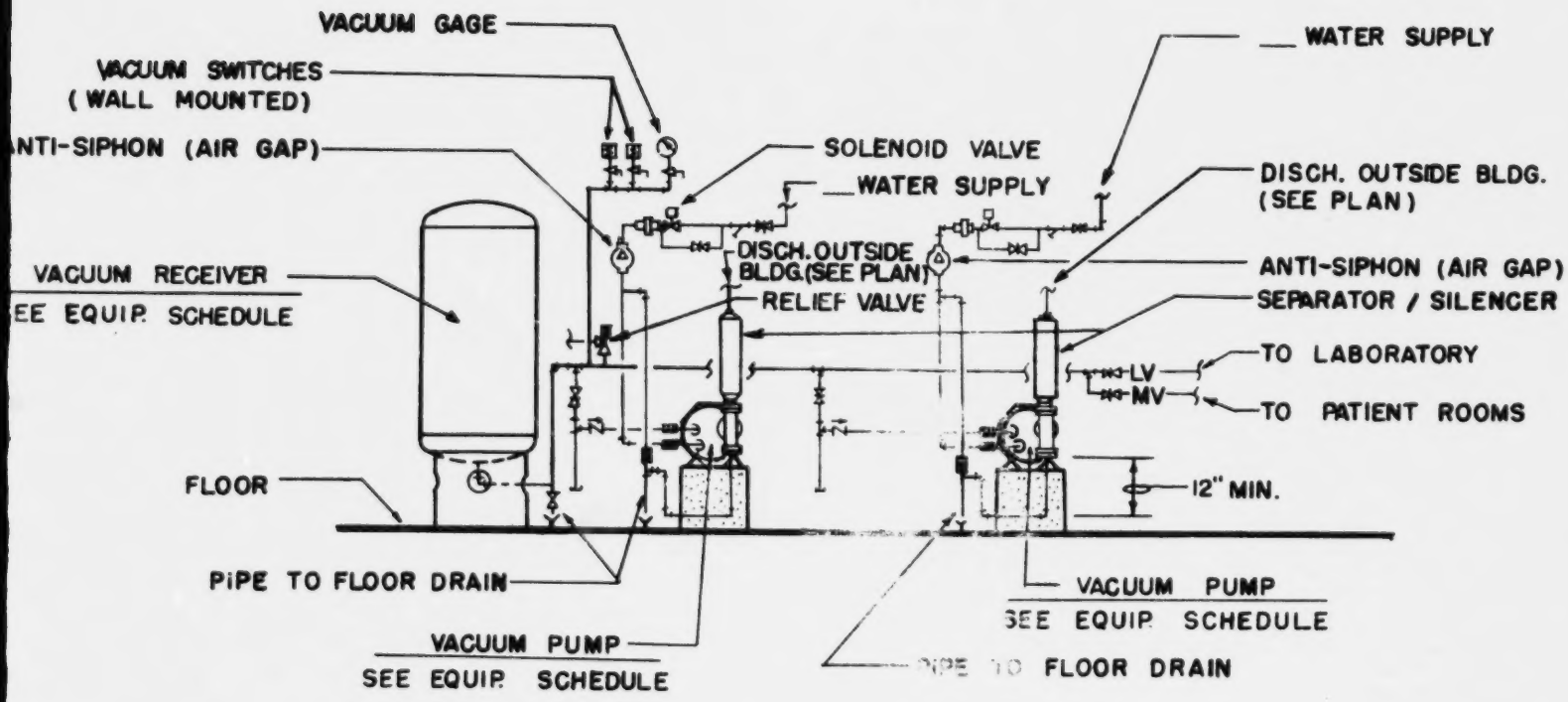


CONTROL SETTINGS

FIRST PUMP START _____ 18" HG VACUUM
SECOND PUMP START _____ 15" HG VACUUM
BOTH PUMPS STOP _____ 25" HG VACUUM

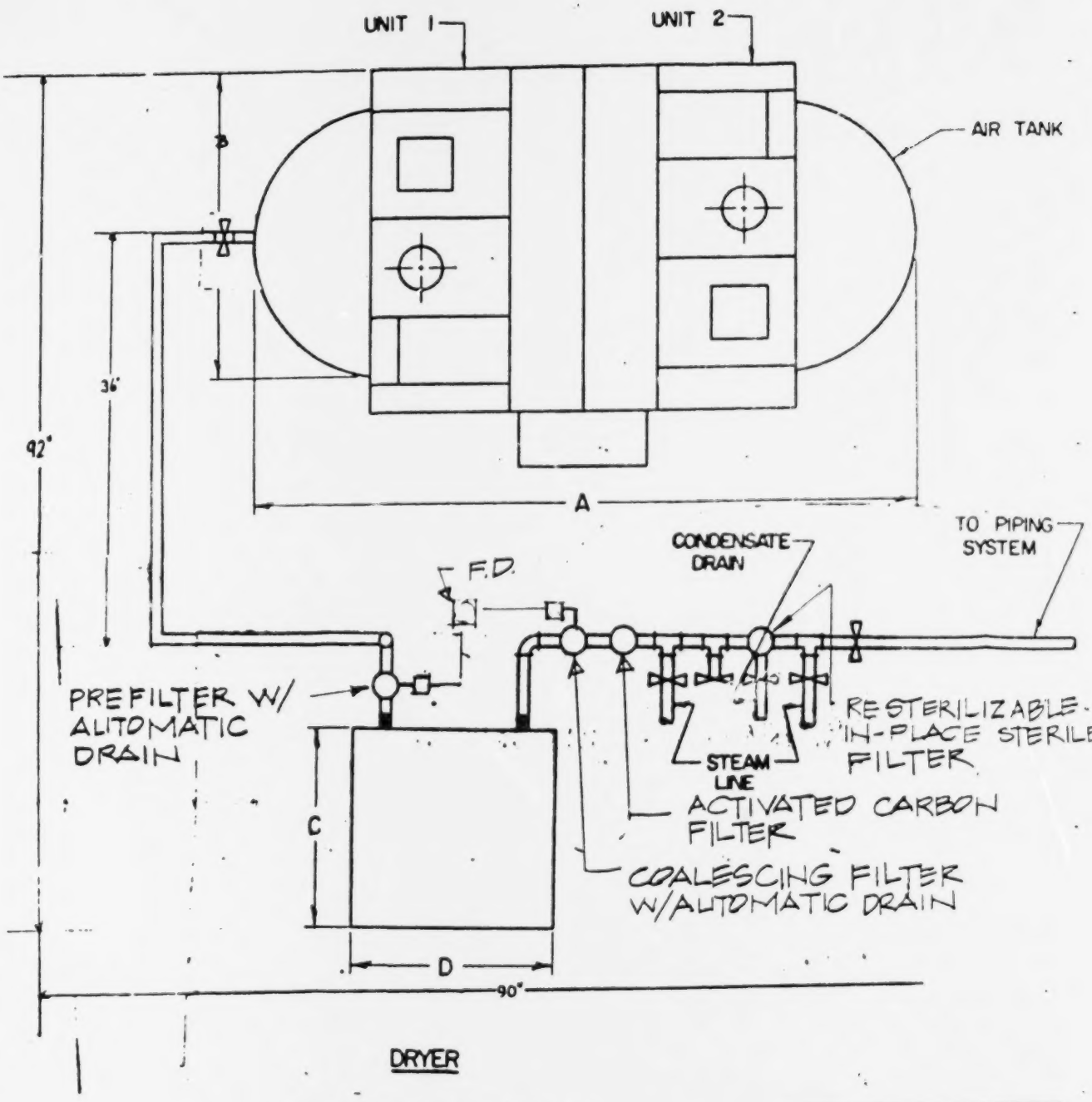
LEGEND

—MV—	SURGICAL SUCTION PIPE
—LV—	LABORATORY VACUUM PIPE
	FLEX. CONNECTION
	STRAINER
	GAS OR AIR COCK
	GATE VALVE
	CHECK VALVE
	FLOW CONTROL VALVE



MEDICAL VACUUM PUMPS- BASE PLATE MOUNTED

NOT TO SCALE



DRYER

DUAL COMPRESSORS - TANK MOUNTED

SYSTEM NO	COMP NO	MOTOR SIZE	TANK SIZE	GAL CAP	DIM A	DIM B	DIM HT	WT LBS	DRYER NO	DIM C	DIM D	DIM HT	WT LBS
CAS 25	2096	5 HP	24x69	120	69"	33"	70"	1350	DA25	21"	21"	21"	77
CAS 36	2097	7.5 HP	30x87	240	87"	38"	70"	2020	DA36	21"	21"	21"	88
CAS 50	2097	10 HP	30x87	240	87"	38"	70"	2600	DA50	25"	23"	25"	110
CAS 75	2098	15 HP	30x87	240	87"	38"	80"	3200	DA75	25"	25"	27"	200

LEGEND

○ = FILTER

⋈ = BALL VALVE

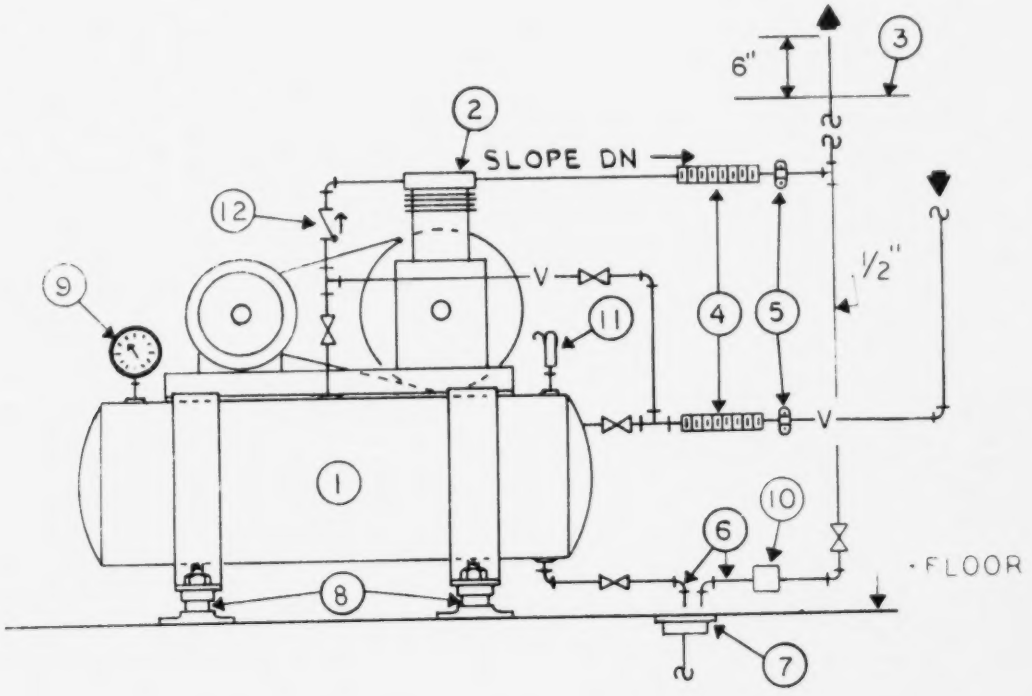
1 OF 1

DENTAL AIR SYSTEM

1. VACUUM TANK
2. VACUUM PUMP
3. HIGHEST ROOF LEVEL
4. FLEXIBLE CONNECTOR
5. ANCHOR TO BUILDING STRUCTURE
6. DRAIN LINE
7. FLOOR DRAIN
8. VIBRATION ISOLATOR
9. VACUUM GAGE (0-30" HG.)
10. AUTOMATIC DRAIN
11. RELIEF VALVE
12. SILENT CHECK VALVE-SPRING LOADED NON-SLAM TYPE

CONTROL SETTING

PUMP START..... 18" HG. VAC
PUMP STOP..... 25" HG. VAC



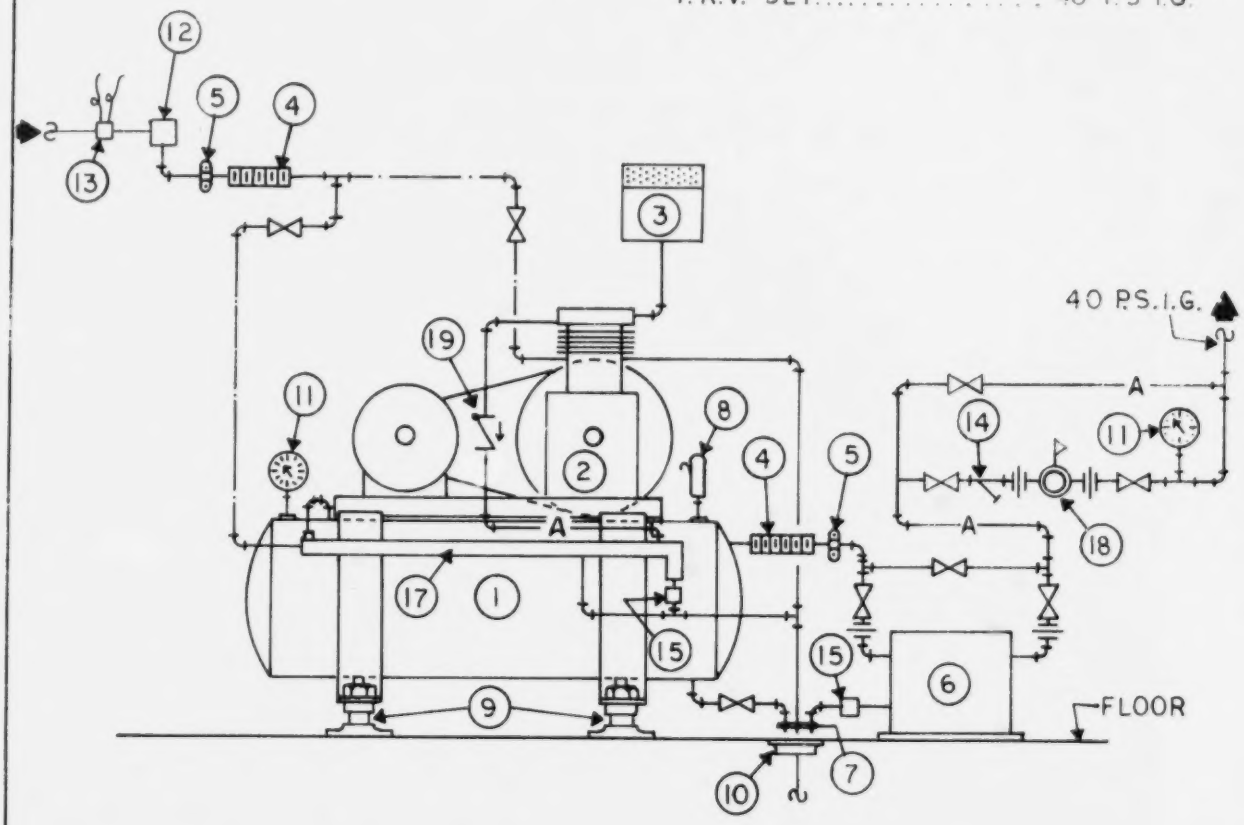
LABORATORY VACUUM PUMP

NOT TO SCALE

(1) AIR RECEIVER
(2) AIR COMPRESSOR
(3) AIR INTAKE MUFFLER-FILTER
(4) FLEXIBLE CONNECTOR
(5) ANCHOR TO BUILDING STRUCTURE
(6) AIR DRIER-REFRIGERATION TYPE
(7) DRAIN LINES
(8) RELIEF VALVE
(9) VIBRATION ISOLATOR
(10) FLOOR DRAIN
(11) PRESSURE GAGE (0-100 PSI)
(12) BACKFLOW PREVENTER
(13) SOLENOID VALVE
(14) STRAINER
(15) AUTOMATIC CONDENSATE TRAP
(17) AFTER-COOLER (WATER COOLED)
(18) PRESSURE REDUCING VALVE
(19) SILENT CHECK VALVE - SPRING LOADED NON-SLAM TYPE

CONTROL SETTING

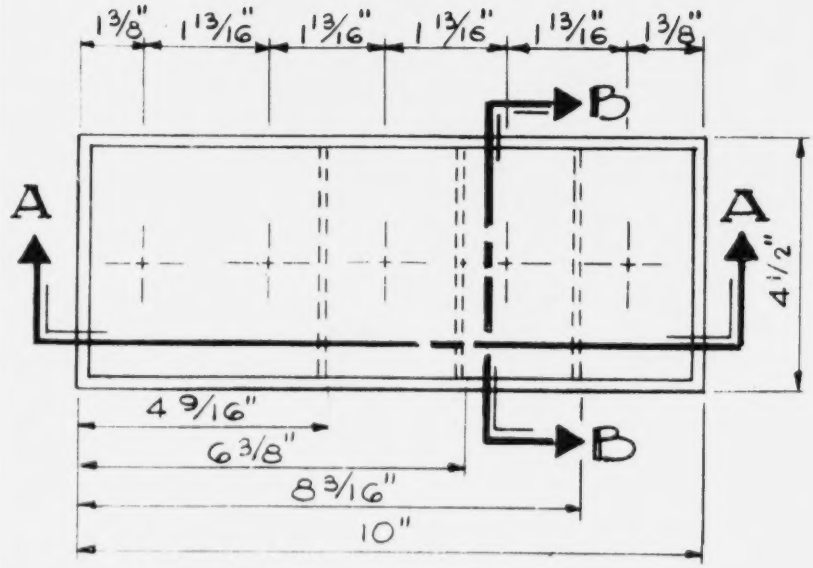
COMPRESSOR START.....40 P.S.I.G.
COMPRESSOR STOP.....50 P.S.I.G.
P.R.V. SET.....40 P.S.I.G.



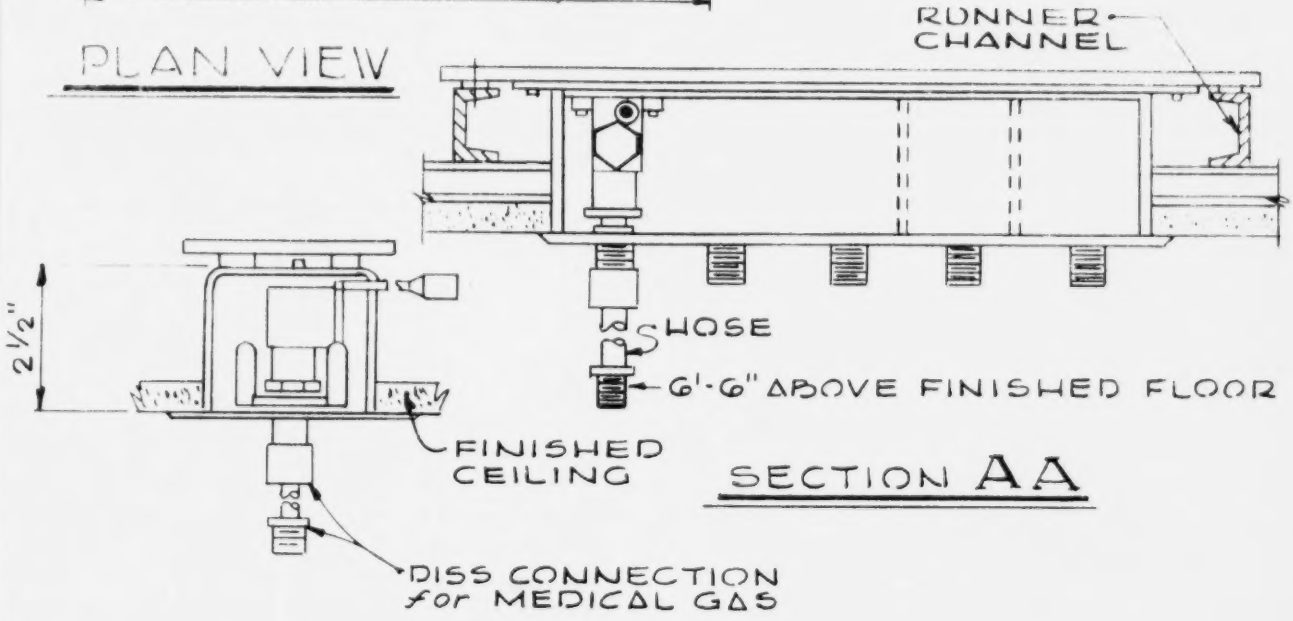
LABORATORY AIR COMPRESSOR

NOT TO SCALE

240-99
(61)
62x



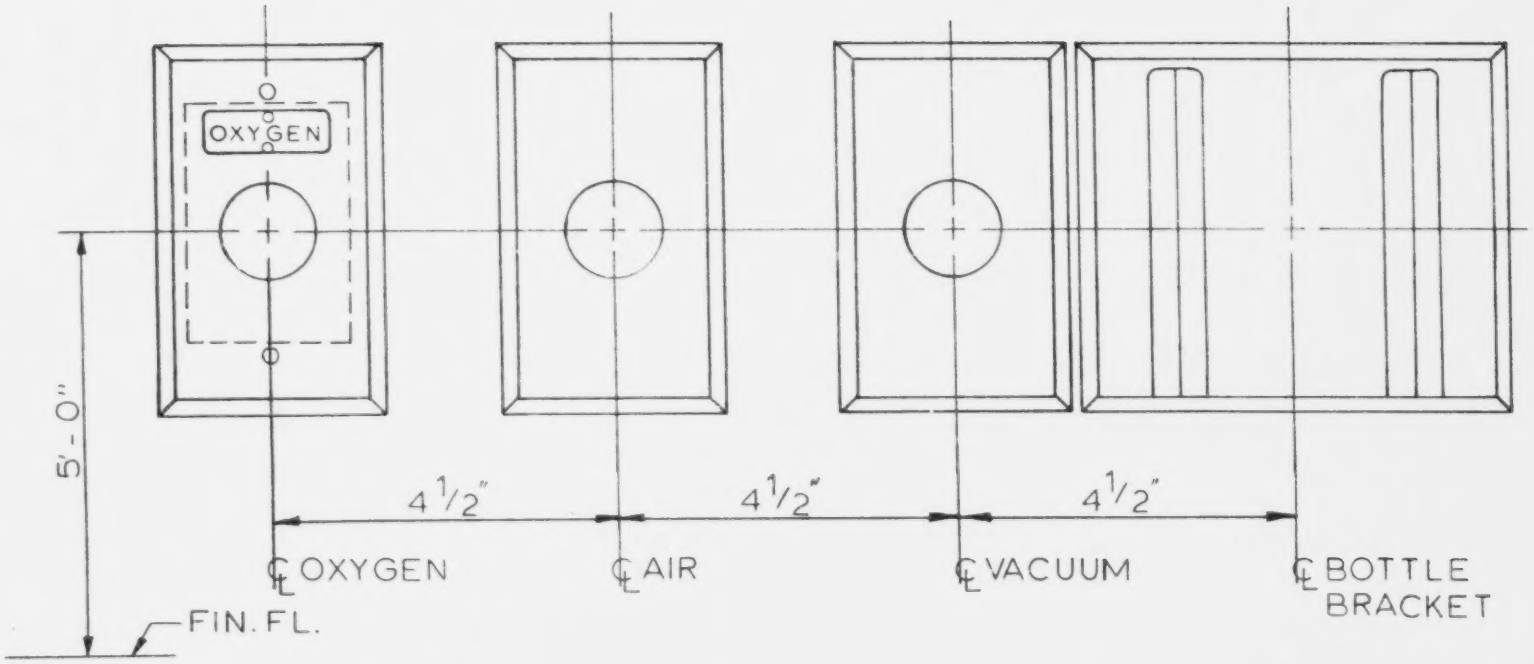
PLAN VIEW



SECTION AA

SECTION BB

CEILING MEDICAL GAS DISPENSER



NOTE

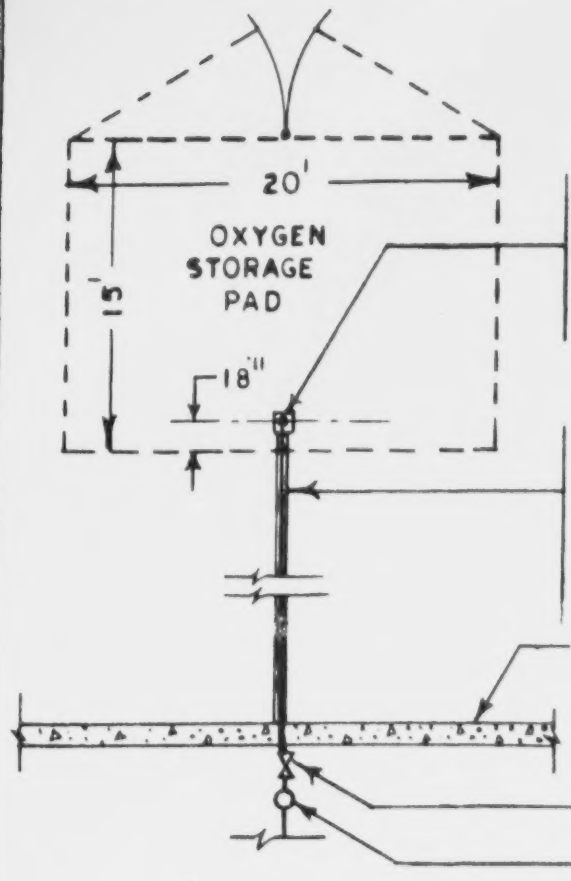
FOR SPACING OF OUTLETS IN PATIENT SERVICE & LIGHTING CONSOLE SEE ELEC. DETAIL NO.

SPACING OF OXYGEN, AIR AND VACUUM OUTLETS WHEN NOT INSTALLED IN PATIENT SERVICE & LIGHTING CONSOLE

LOCATION	PANEL	GAGES	SERVICE INDICATOR LIGHTS
ENGINEERING GRAPHIC CONTROL CENTER ROOM AND TELEPHONE SWITCHBOARD	SYSTEM	NO	OXYGEN LINE PRESSURE LOW OXYGEN LINE PRESSURE HIGH OXYGEN RESERVE IN USE OXYGEN LOW LIQUID LEVEL OXYGEN RESERVE LOW NITROUS OXIDE LINE PRESSURE HIGH NITROUS OXIDE LINE PRESSURE LOW NITROUS OXIDE RESERVE IN USE VACUUM LINE PRESSURE LOW AIR LINE PRESSURE HIGH AIR LINE PRESSURE LOW NITROGEN LINE PRESSURE HIGH NITROGEN LINE PRESSURE LOW NITROGEN RESERVE IN USE TEST BUTTON
SURGERY CONTROL ROOM	MLPA*	YES	OXYGEN LINE PRESSURE ABNORMAL NITROUS OXIDE LINE PRESSURE ABNORMAL VACUUM LINE PRESSURE LOW AIR LINE PRESSURE ABNORMAL NITROGEN - LINE PRESSURE ABNORMAL TEST BUTTON
INTENSIVE CARE & CORONARY CARE UNITS, RECOVERY ROOMS & PATIENT AREAS *EMER. AREA*	MLPA*	YES	OXYGEN LINE PRESSURE ABNORMAL VACUUM LINE PRESSURE LOW AIR LINE PRESSURE ABNORMAL TEST BUTTON
MEDICAL GAS ALARM PANELS			

NOTE: ON PROJECTS INDICATE ROOM NUMBERS

*MLPA = MODULAR LINE PRESSURE ALARM



TERMINATE OXYGEN PIPE LINE IN 12" X 12" OPENING 2" BELOW SURFACE OF PAVED AREA. PIPE TO BE CAPPED FOR FUTURE CONNECTION BY OTHERS. COVER SQUARE OPENING WITH 14" X 14" REMOVABLE PLATE.

OXYGEN PIPE LINE TO BE A MINIMUM OF 3 FEET BELOW GRADE AND BELOW THE FROST LINE. HORIZONTAL LINE TO BE INCASED IN UNCAULKED (PVC) PLASTIC PIPE, SCHEDULE 80, ASTM D-1785, FOR PROTECTION.

OUTSIDE BUILDING WALL

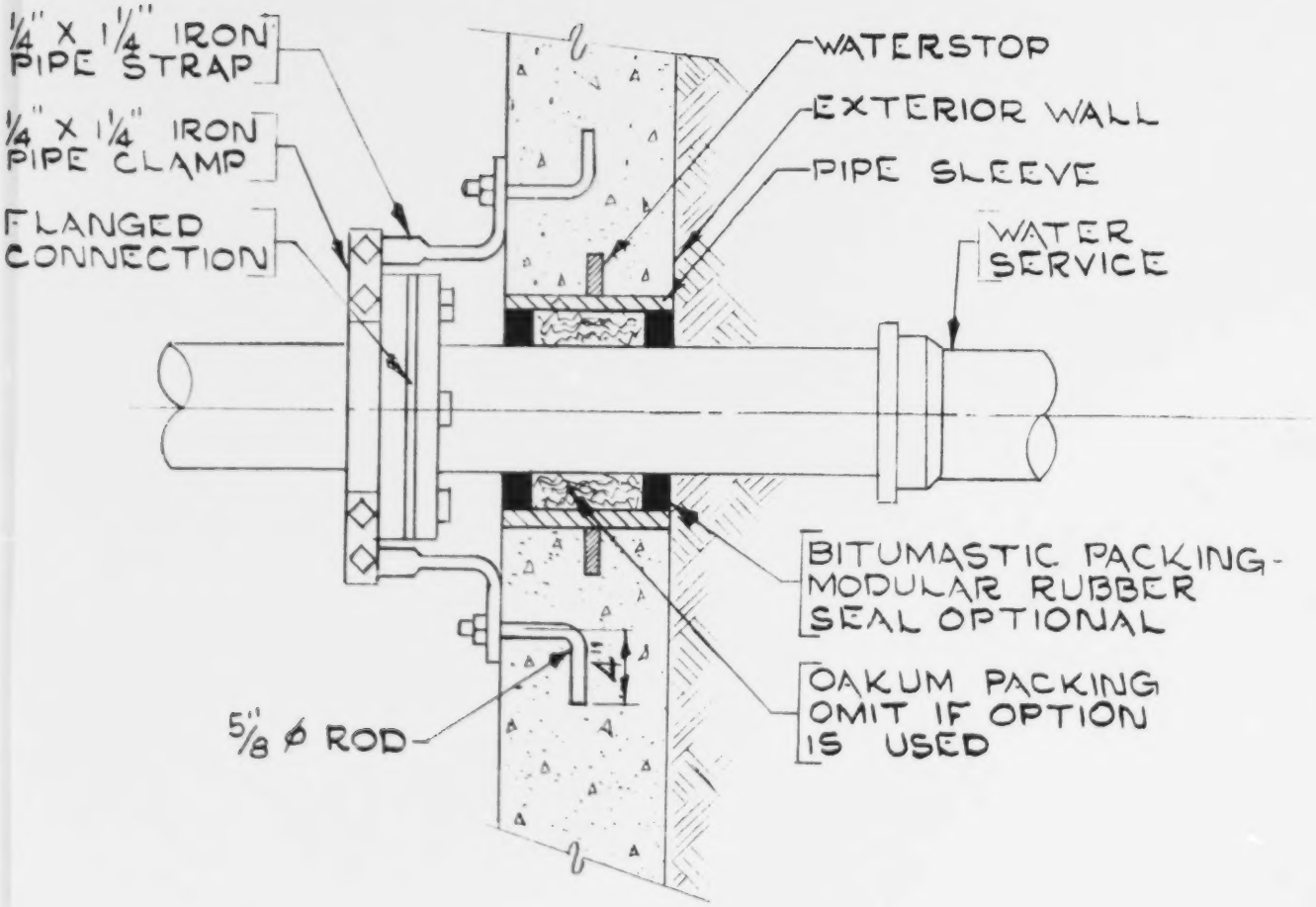
MAIN ENTRANCE VALVE

PRESSURE ALARM SWITCH

NOTE TO A/E
THE OXYGEN STORAGE PAD AND ENCLOSURE IS TO BE SHOWN ON THE SITE PLANNING AND LANDSCAPE DRAWINGS.
A PART PLOT PLAN INDICATING THE LENGTH OF RUN OF OXYGEN PIPING OUTSIDE OF BUILDING SHALL BE SHOWN ON THE PLUMBING DRAWING.

OUTSIDE OXYGEN STORAGE

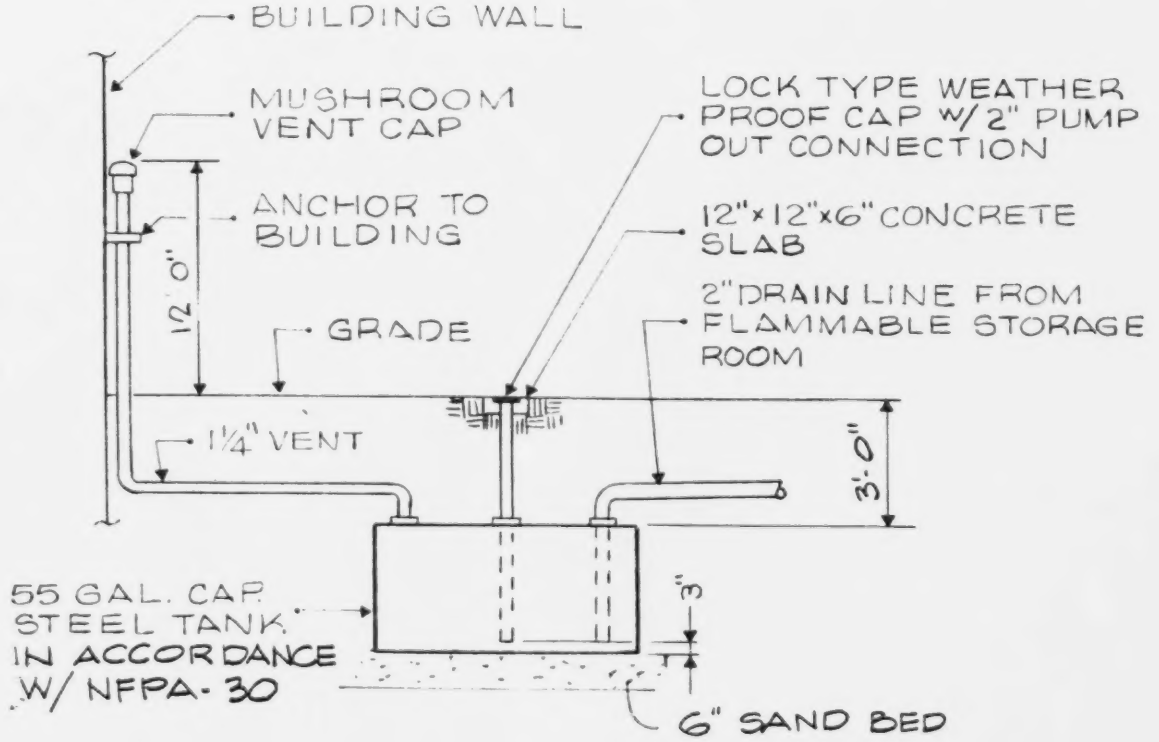
NOT TO SCALE



ANCHOR FOR COLD WATER SERVICE

NOT TO SCALE

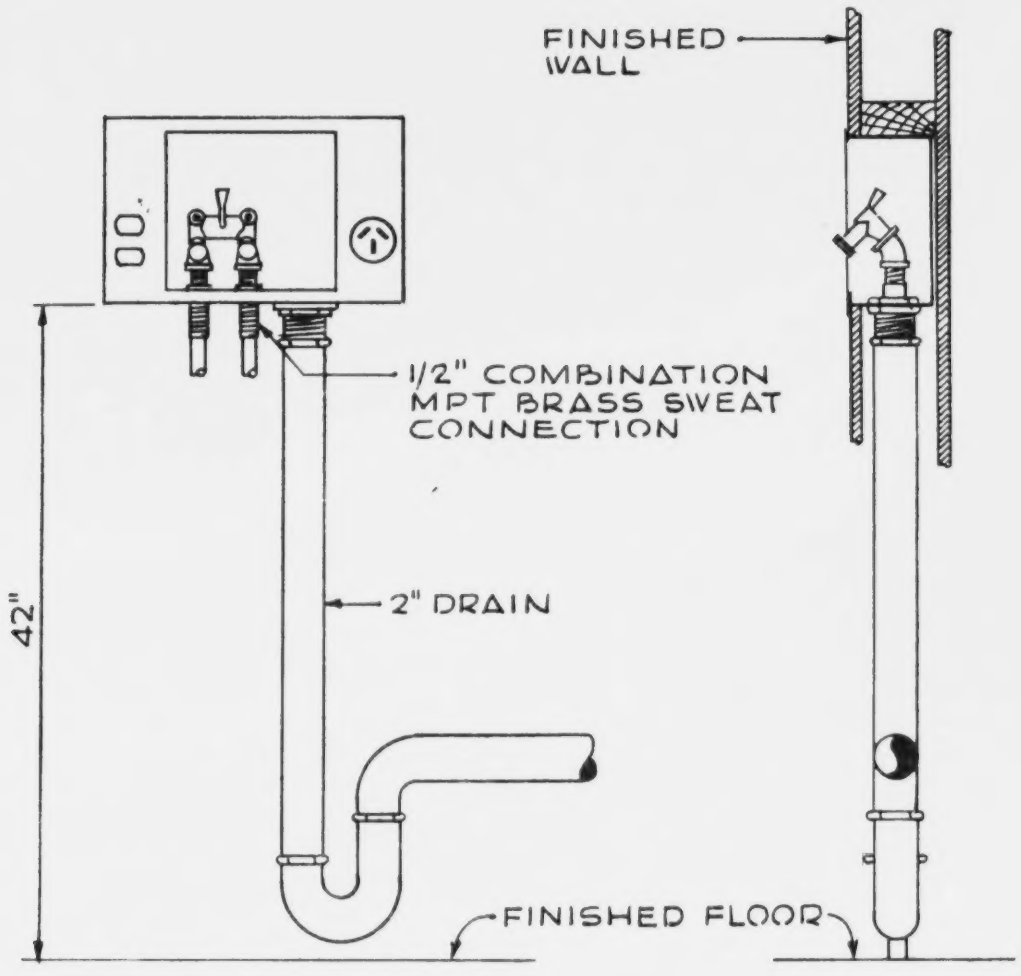
NOTE: NON-METALLIC TANK SHALL BE INSTALLED IN ACCORDANCE W/ MFGRS INSTRUCTIONS



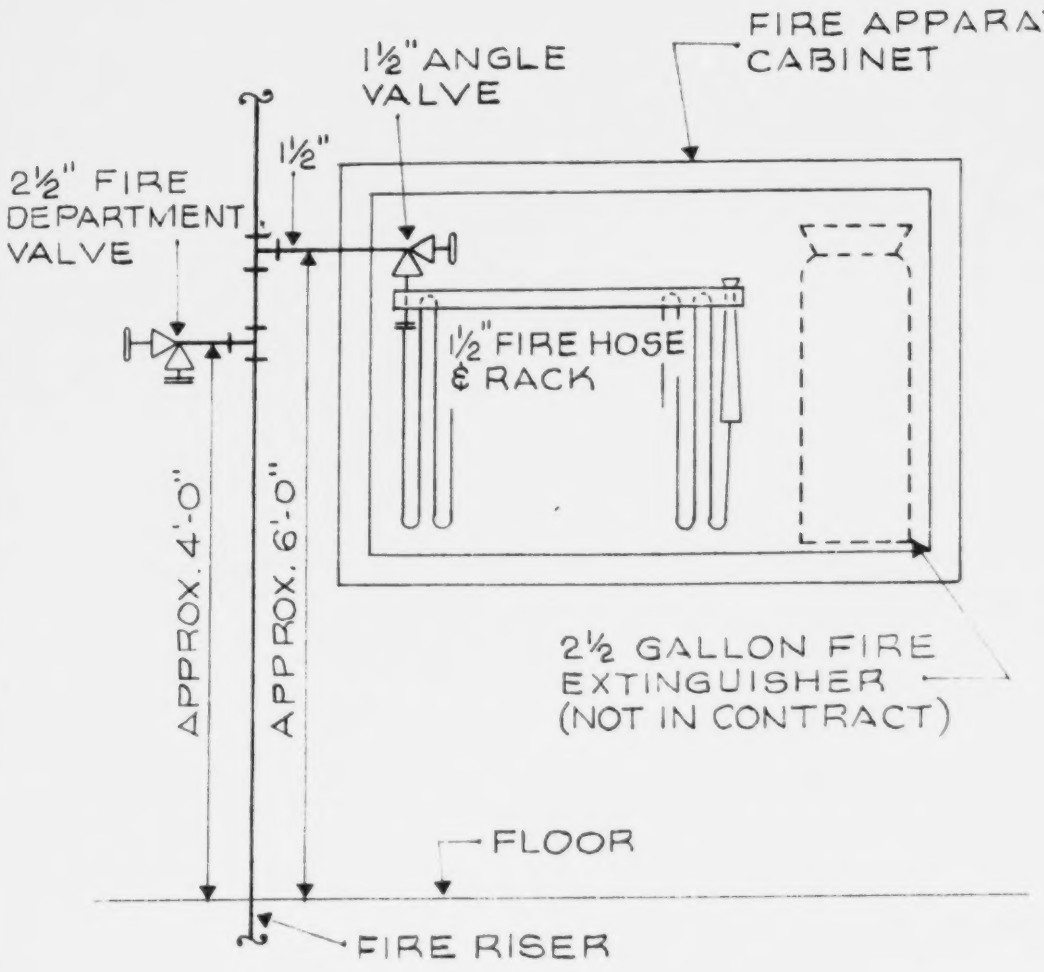
FLAMMABLE STORAGE TANK

NOT TO SCALE

4-83 (341)

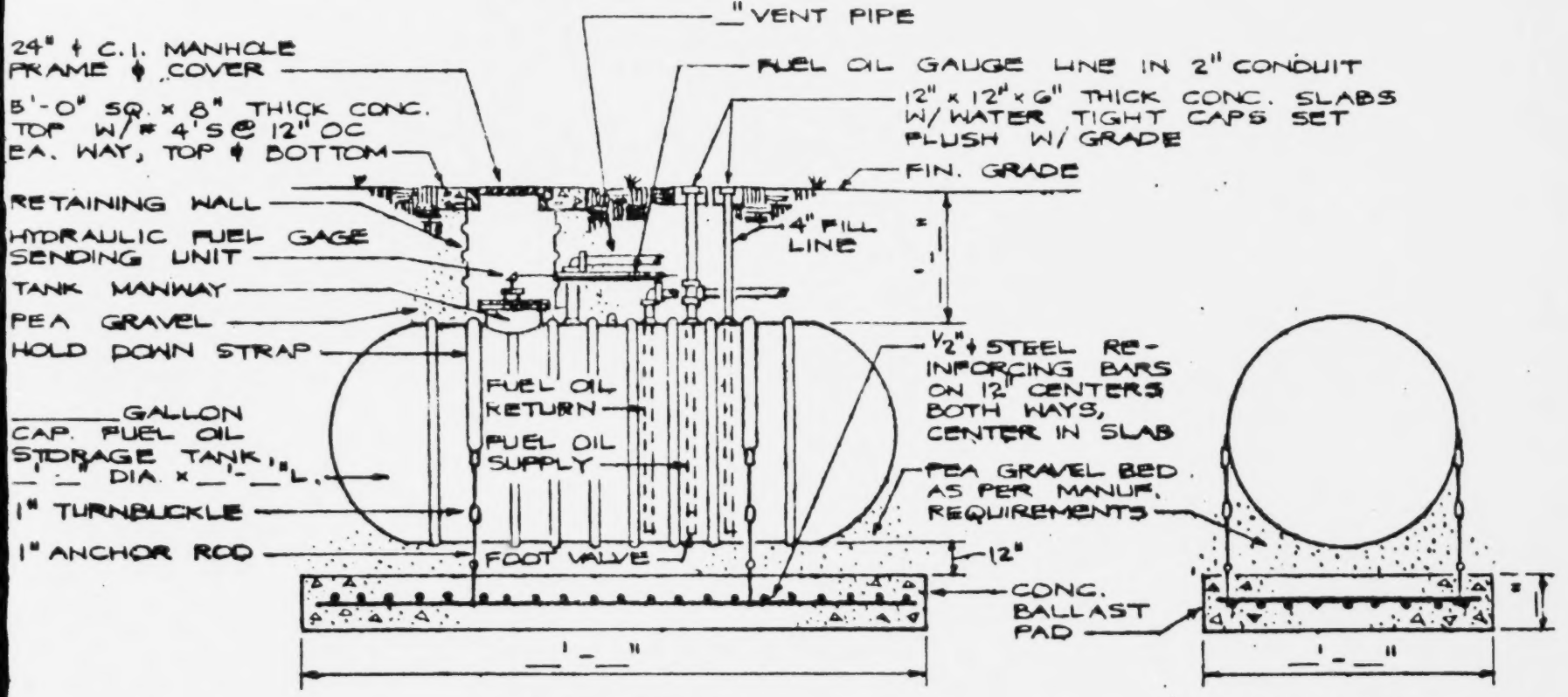


WASHING MACHINE SUPPLY AND DRAIN UNIT (P-808)



FIRE APPARATUS CABINET PIPING

NOT TO SCALE


__" VENT PIPE
24" ϕ C.I. MANHOLE FRAME ϕ COVER
FUEL OIL GAUGE LINE IN 2" CONDUIT
8'-0" SQ. x 8" THICK CONC. TOP W/ # 4'S @ 12" OC EA. WAY, TOP ϕ BOTTOM
12" x 12" x 6" THICK CONC. SLABS W/ WATER TIGHT CAPS SET FLUSH W/ GRADE
FIN. GRADE
RETAINING WALL
4" FILL LINE
HYDRAULIC FUEL GAGE SENDING UNIT
TANK MANWAY
PEA GRAVEL
HOLD DOWN STRAP
½" ϕ STEEL RE-INFORCING BARS ON 12" CENTERS BOTH WAYS, CENTER IN SLAB
FUEL OIL RETURN
FUEL OIL SUPPLY
_____GALLON CAP. FUEL OIL STORAGE TANK __'-__" DIA. x __'-__" L.
PEA GRAVEL BED AS PER MANUF. REQUIREMENTS
1" TURNBUCKLE
1" ANCHOR ROD
FOOT VALVE
12"
CONC. BALLAST PAD
__'-__"
__'-__"
SIDE VIEW
END VIEW

UNDERGROUND FUEL OIL STORAGE TANK DETAIL

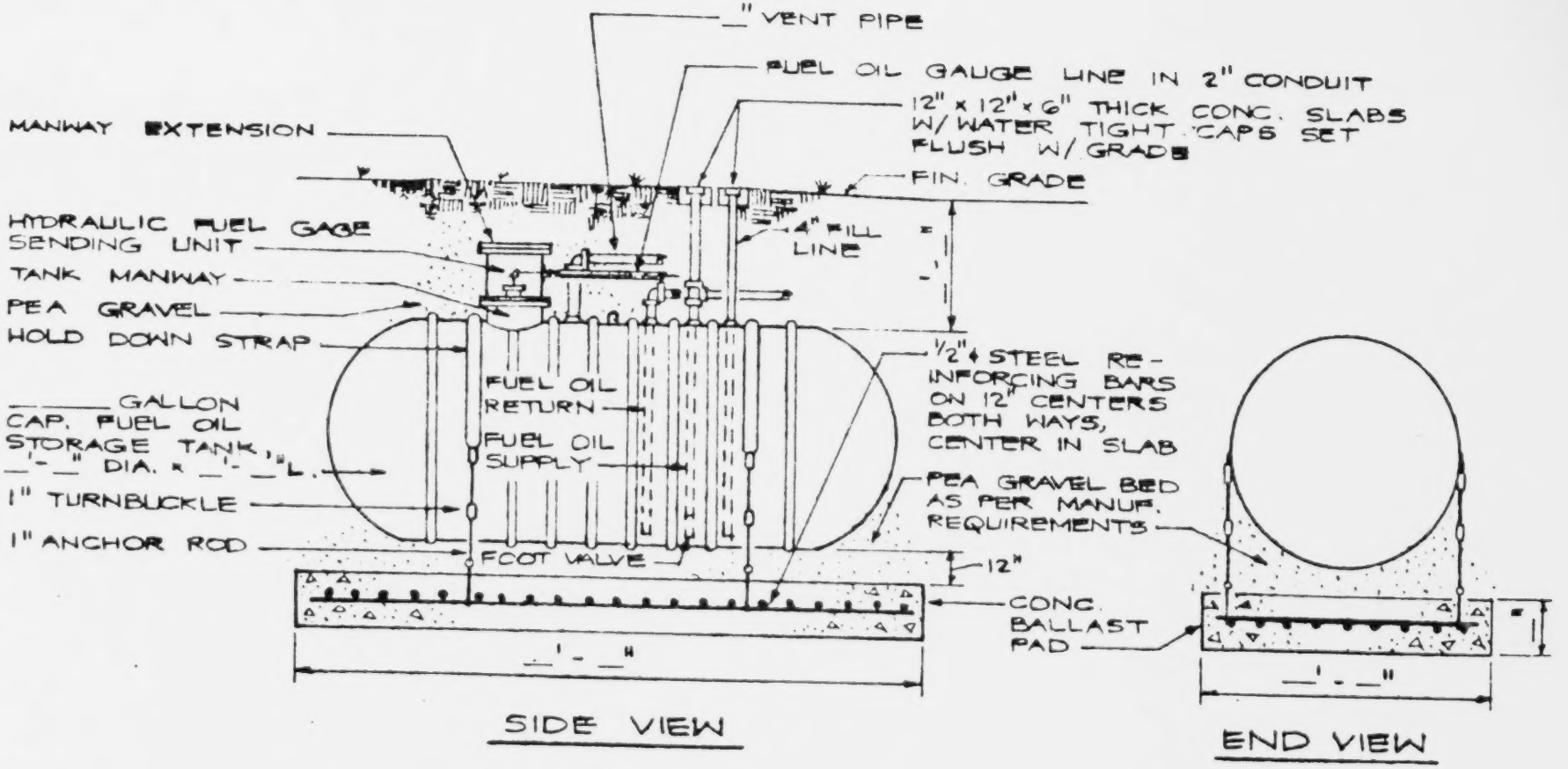
NO SCALE

NOTE:

THIS DETAIL APPLIES TO TANKS OF 4,000 GALLONS CAPACITY OR MORE.

364

4-83


__" VENT PIPE
FUEL OIL GAUGE LINE IN 2" CONDUIT
12" x 12" x 6" THICK CONC. SLABS W/ WATER TIGHT CAPS SET FLUSH W/ GRADE
MANWAY EXTENSION
FIN. GRADE
HYDRAULIC FUEL GAGE SENDING UNIT
4" FILL LINE
TANK MANWAY
PEA GRAVEL
HOLD DOWN STRAP
1/2" ϕ STEEL RE-INFORCING BARS ON 12" CENTERS BOTH WAYS, CENTER IN SLAB
FUEL OIL RETURN
FUEL OIL SUPPLY
_____ GALLON CAP. FUEL OIL STORAGE TANK, __'-__" DIA. x __'-__" L.
PEA GRAVEL BED AS PER MANUF. REQUIREMENTS
1" TURNBUCKLE
1" ANCHOR ROD
FOOT VALVE
12"
CONC. BALLAST PAD
__'-__"
__'-__"
SIDE VIEW
END VIEW

UNDERGROUND FUEL OIL STORAGE TANK DETAIL

NO SCALE

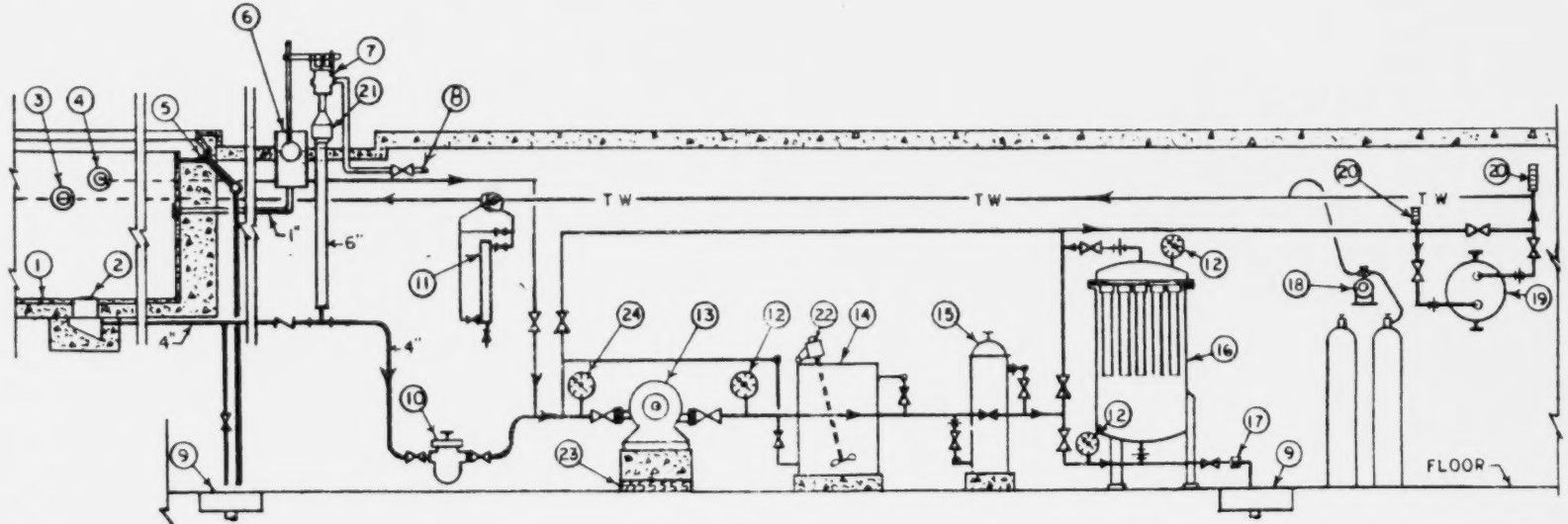
NOTE :

THIS DETAIL APPLIES TO TANKS UNDER 4,000 GALLONS CAPACITY.

365

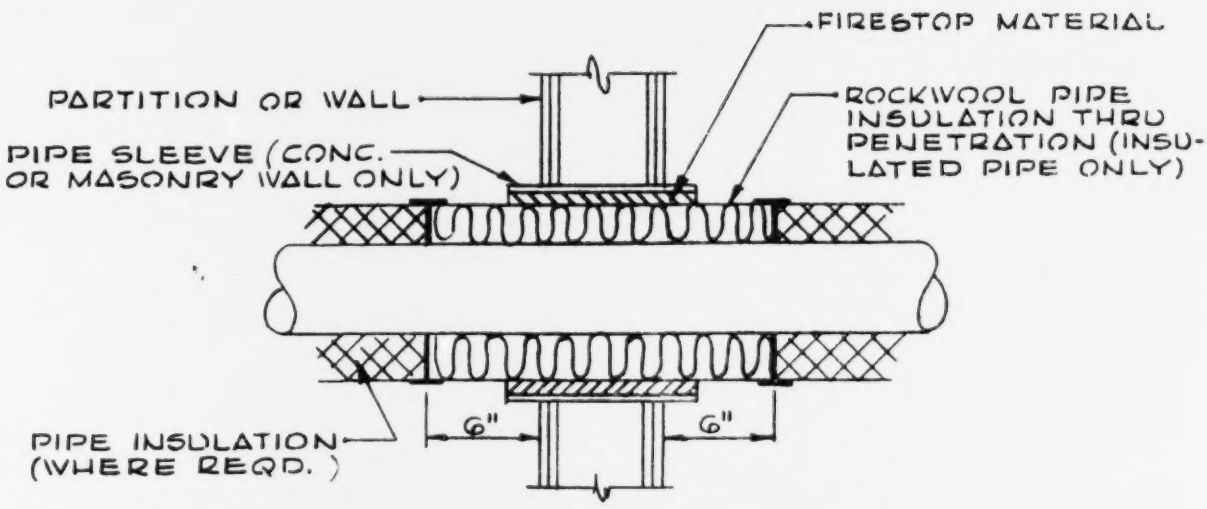
4-83

1. THERAPEUTIC POOL
2. POOL DRAIN
3. POOL INLET
4. VACUUM CLEANING FITTING
5. SCUM GUTTER DRAIN
6. FLOAT TANK - 15" X 24"
7. FLOAT CONTROL VALVE
8. POOL MAKEUP WATER
9. SUMP PIT
10. HAIR AND LINT INTERCEPTOR
11. RATE OF FLOW INDICATOR
12. PRESSURE GAGE
13. CIRCULATION PUMP
14. CONTINUOUS BODY FEED TANK
15. PRECOAT TANK
16. FILTER - DIATOMACEOUS EARTH
17. SIGHT GLASS
18. HYPOCHLORINATOR
19. WATER HEATER (STEAM)
20. THERMOMETER
21. AIR GAP FITTING
22. MOTOR DRIVEN AGITATOR
23. ISOLATION CORK 2" THICK
24. COMPOUND PRESSURE-VACUUM GAGE

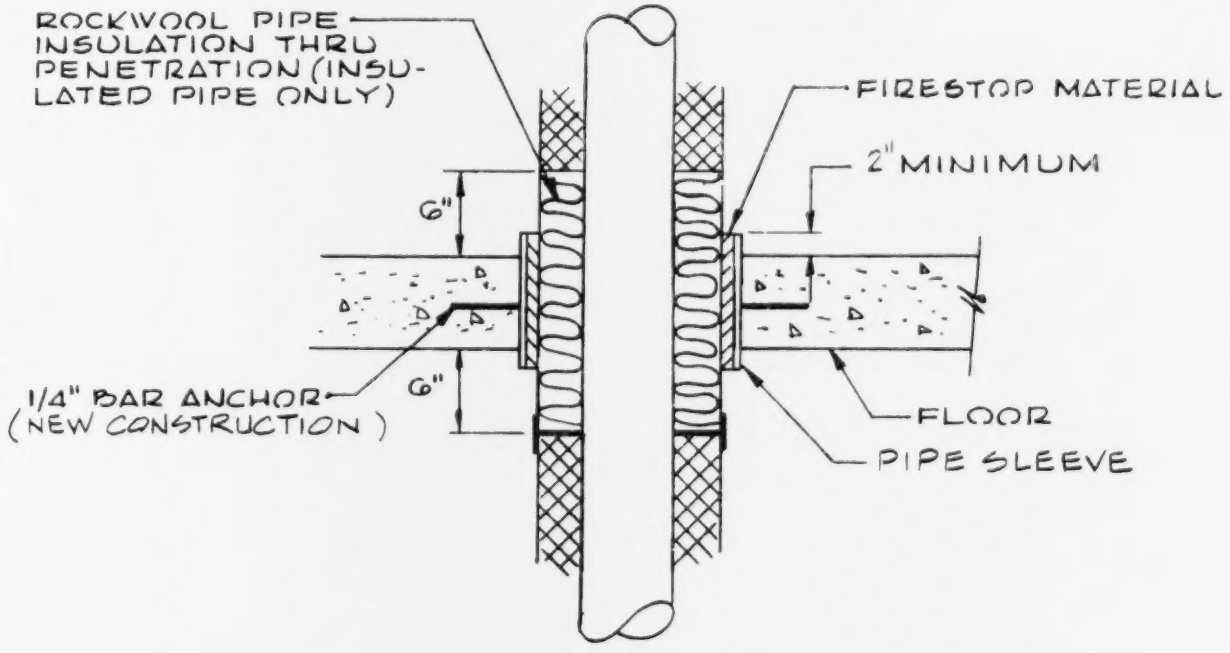


THERAPEUTIC POOL EQUIPMENT

NOT TO SCALE

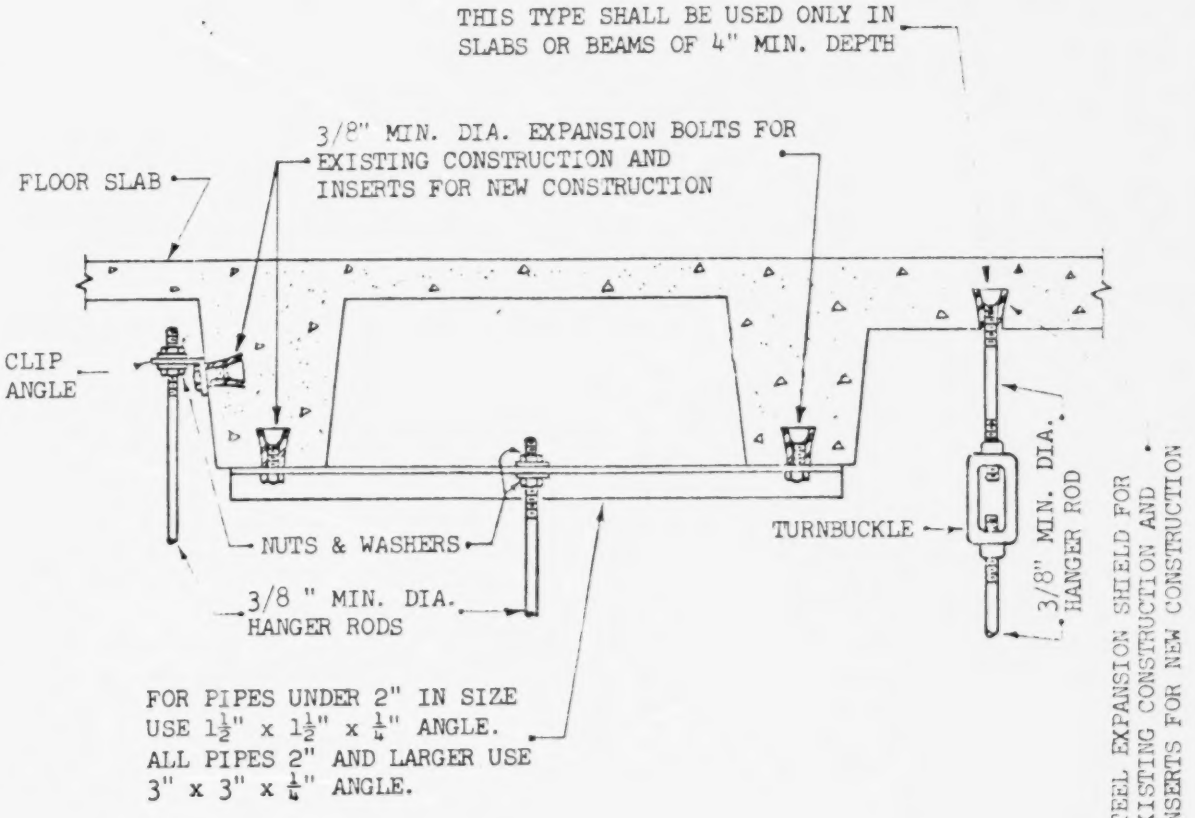


ELEVATION - WALL PENETRATION

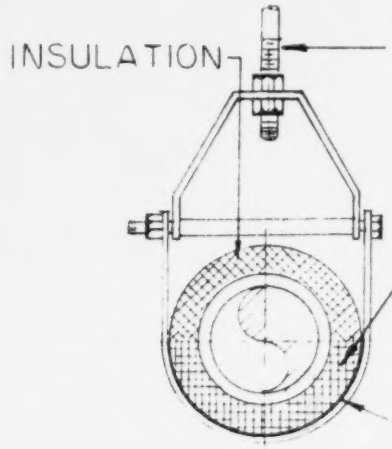


ELEVATION - FLOOR PENETRATION

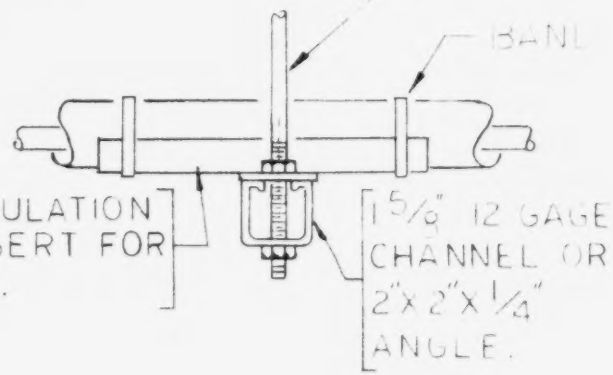
PIPE PENETRATIONS OF FIRE/SMOKE BARRIERS


THIS TYPE SHALL BE USED ONLY IN SLABS OR BEAMS OF 4" MIN. DEPTH
3/8" MIN. DIA. EXPANSION BOLTS FOR EXISTING CONSTRUCTION AND INSERTS FOR NEW CONSTRUCTION
FLOOR SLAB
CLIP ANGLE
NUTS & WASHERS
3/8 " MIN. DIA. HANGER RODS
TURNBUCKLE
3/8" MIN. DIA. HANGER ROD
STEEL EXPANSION SHIELD FOR EXISTING CONSTRUCTION AND INSERTS FOR NEW CONSTRUCTION
FOR PIPES UNDER 2" IN SIZE USE 1½" x 1½" x ¼" ANGLE.
ALL PIPES 2" AND LARGER USE 3" x 3" x ¼" ANGLE.

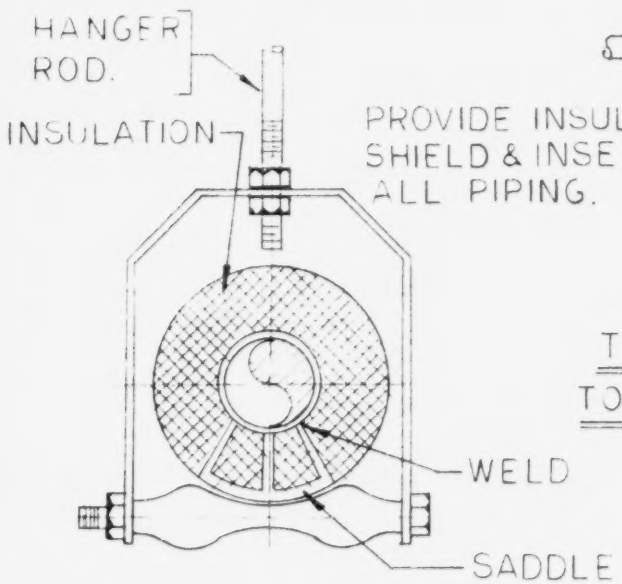
METHODS OF SECURING HANGER RODS


INSULATION
HANGER ROD
PROVIDE HIGH COMPRESSIVE STRENGTH INSULATION. INSERT UNDER INSULATION SHIELD.
1/2" DIA HANGER RODS WITH 36" MAX. SPACING ON EACH CHANNEL.
INSULATION SHIELD AT HANGER.

ADJUSTABLE CLEVIS HANGER
TYPE 1 IN SPECIFICATIONS



TRAPEZE HANGER FOR UP TO 1000 LB. UNIFORM LOAD



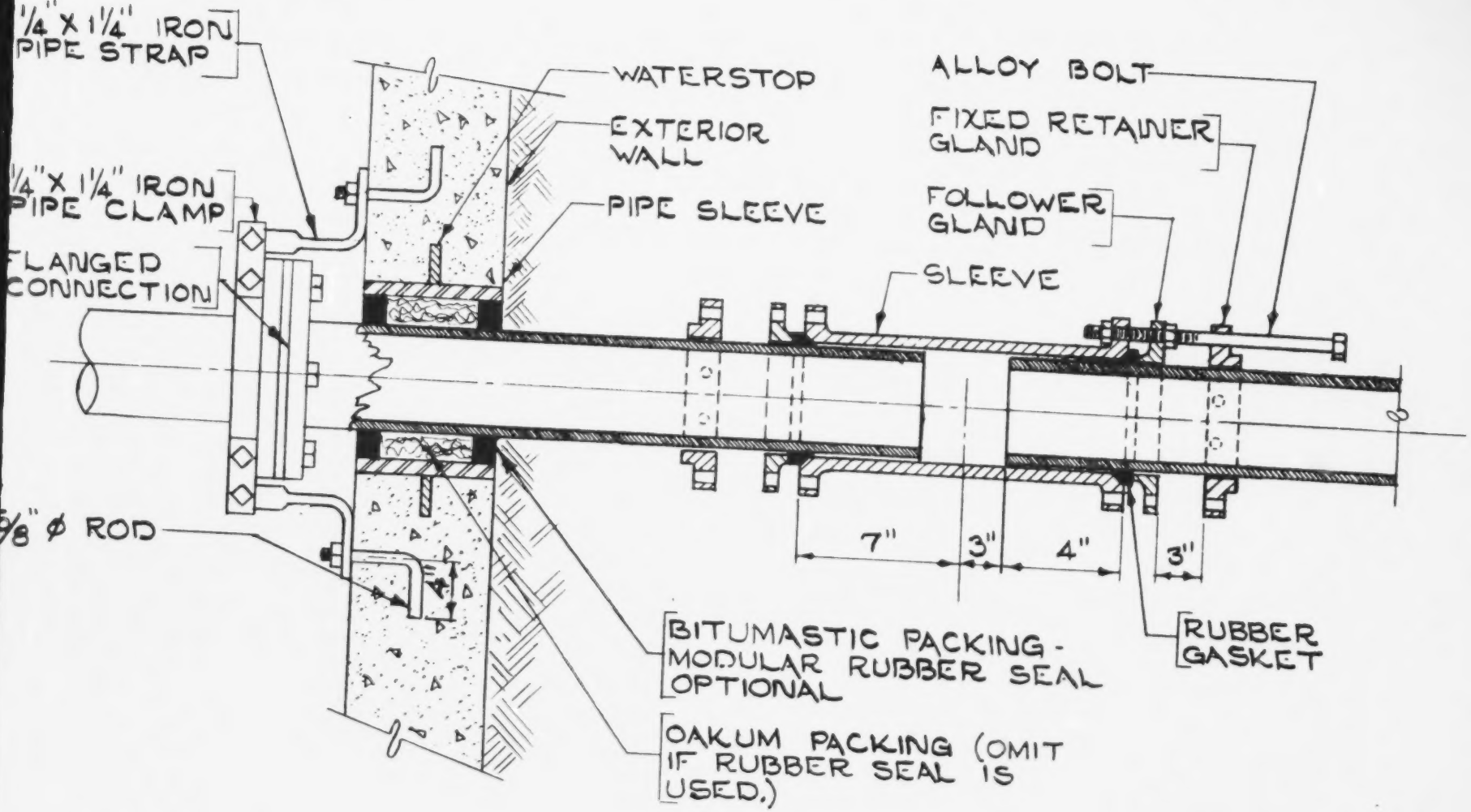
ADJUSTABLE ROLLER HANGER
TYPE 44 IN SPECIFICATIONS

PIPE HANGERS

NOTES FOR SEISMIC BRACING

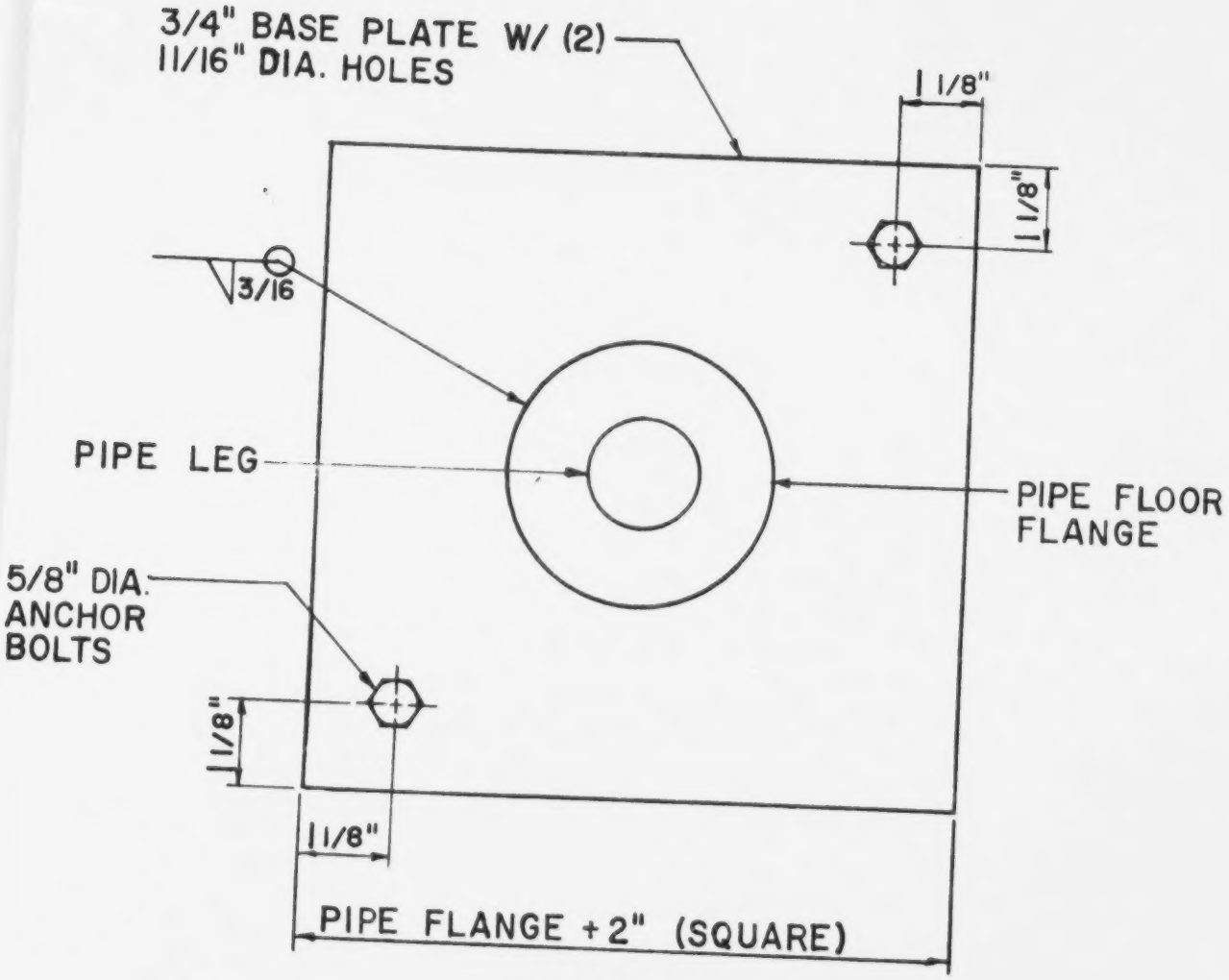
1. NO BRACING IS REQUIRED IF THE TOP OF THE PIPE IS SUSPENDED 12 INCHES OR LESS FROM THE SUPPORTING STRUCTURAL MEMBER.
2. WALLS, INCLUDING DRYWALL PARTITIONS, MAY REPLACE REQUIRED TRANSVERSE OR VERTICAL BRACING FOR PIPING.
3. ATTACHMENT TO STRUCTURAL MEMBERS SHALL USE DEVICES INCLUDED IN MSS SP-58 OR BE BOLTED/WELDED AS APPROVED BY THE RESIDENT ENGINEER. BRACES SHALL BE CONNECTED TO THE HANGERS/SUPPORTS FOR PIPING.
4. SEE THE SPECIFICATIONS FOR REQUIRED STRENGTH OF BRACING.
5. LATERAL SEISMIC FORCE SHALL BE CONSIDERED TO ACT CONCURRENTLY WITH THE DEAD LOAD. THE SLENDERNESS RATIO (l/r) OF BRACES SHALL NOT EXCEED 200, WHERE (l) IS THE LENGTH OF THE BRACE AND (r) IS THE LEAST RADIUS OF GYRATION, BOTH IN INCHES.
6. SWAY BRACING METHODS SHOWN IN NFPA 13 (SPRINKLER PIPING) MAY BE USED IN LIEU OF DETAILS SHOWN ON THE DRAWINGS FOR PIPING.
7. BRACE ALL PIPES 2 1/2 INCHES DIAMETER AND LARGER. IN MECHANICAL ROOMS ALSO 1 1/4, 1 1/2, and 2-INCH PIPING AS FOR 2 1/2 INCH PIPING.
8. TRANSVERSE AND VERTICAL BRACING SHALL OCCUR AT 40-FOOT INTERVALS, MAXIMUM. LONGITUDINAL BRACING SHALL OCCUR AT 80-FOOT INTERVALS, MAXIMUM.
9. AT PIPE RISERS, WHEREVER POSSIBLE, SUPPORT THE WEIGHT OF THE RISER AT A POINT OR POINTS ABOVE THE CENTER OF GRAVITY OF THE RISER.
10. DO NOT FASTEN ONE RIGID PIPING SYSTEM TO TWO DISSIMILAR PARTS OF THE BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE; FOR EXAMPLE, A WALL AND A ROOF.
11. DO NOT USE BRANCH LINES TO BRACE MAIN LINES.
12. ALL SEISMIC BRACING FOR FIRE SPRINKLER SYSTEM SHALL COMPLY WITH NFPA 13.

Standard 13a
Replaced with
1-95 edition



ANCHOR FOR COLD WATER SERVICE - SEISMIC AREAS

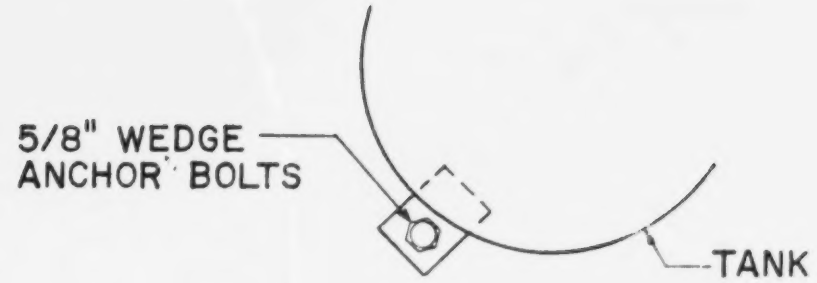
NOT TO SCALE



PLAN

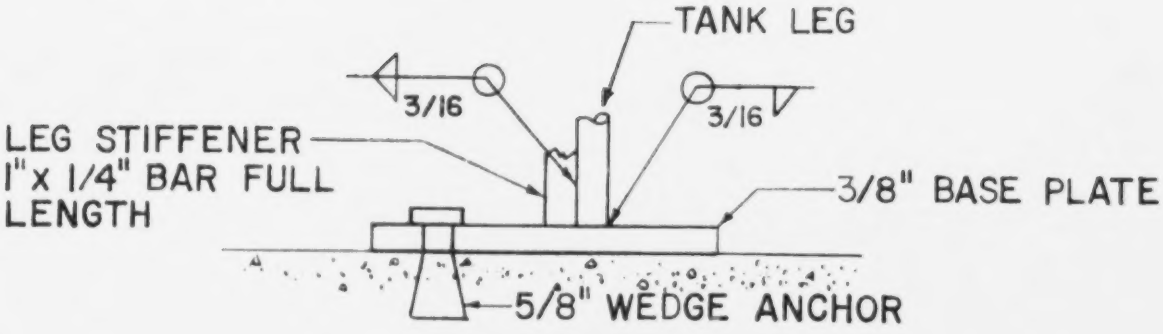
SEISMIC SUPPORTS FOR HOT WATER HEATER AND ACCUMULATOR

NO SCALE



IF TANK PROVIDED WITH ANCHOR HOLE

PLAN

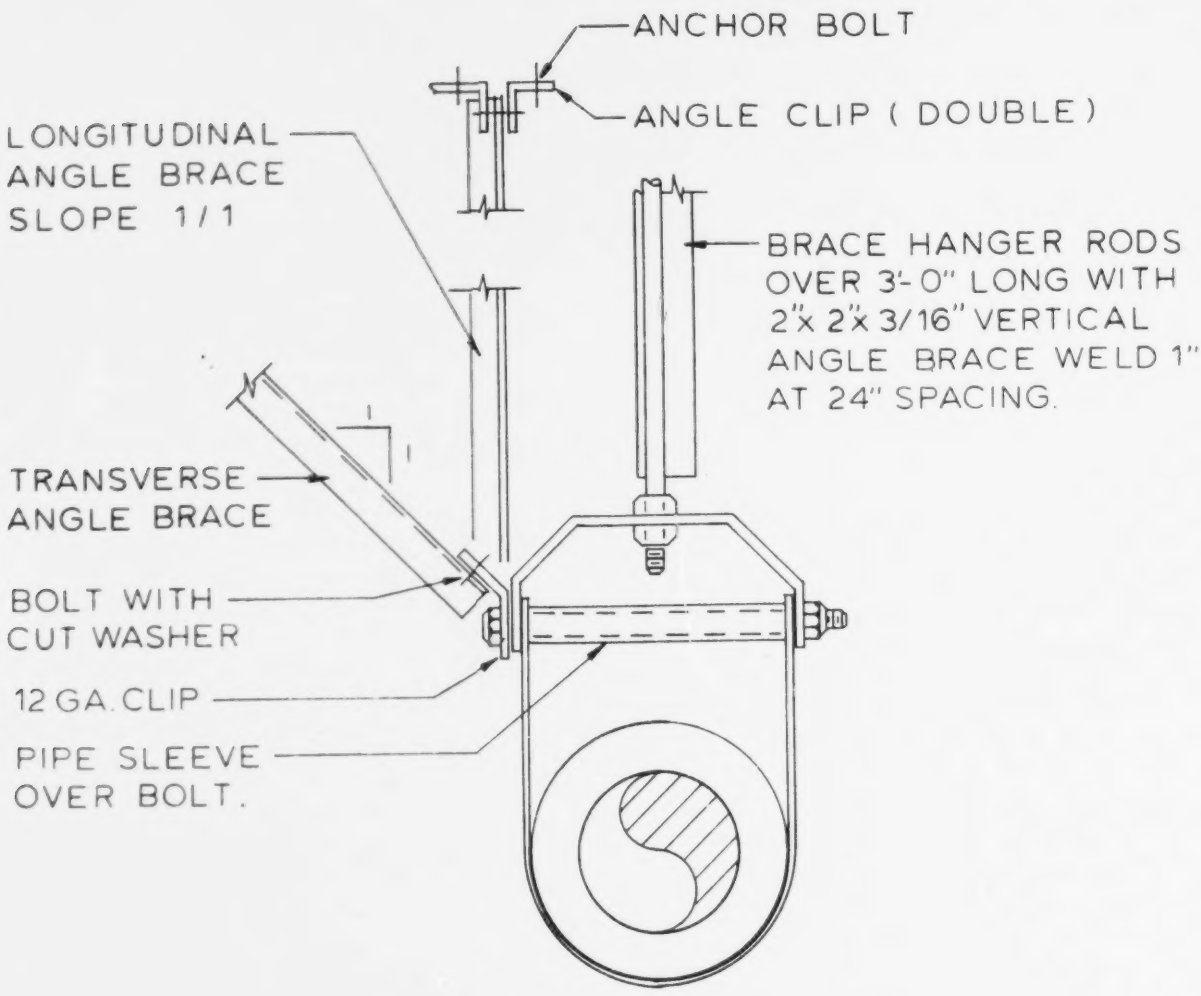


TANK PROVIDED WITH NO ANCHOR HOLE

PLAN

SEISMIC SUPPORTS FOR ORAL EVACUATION SEPARATOR

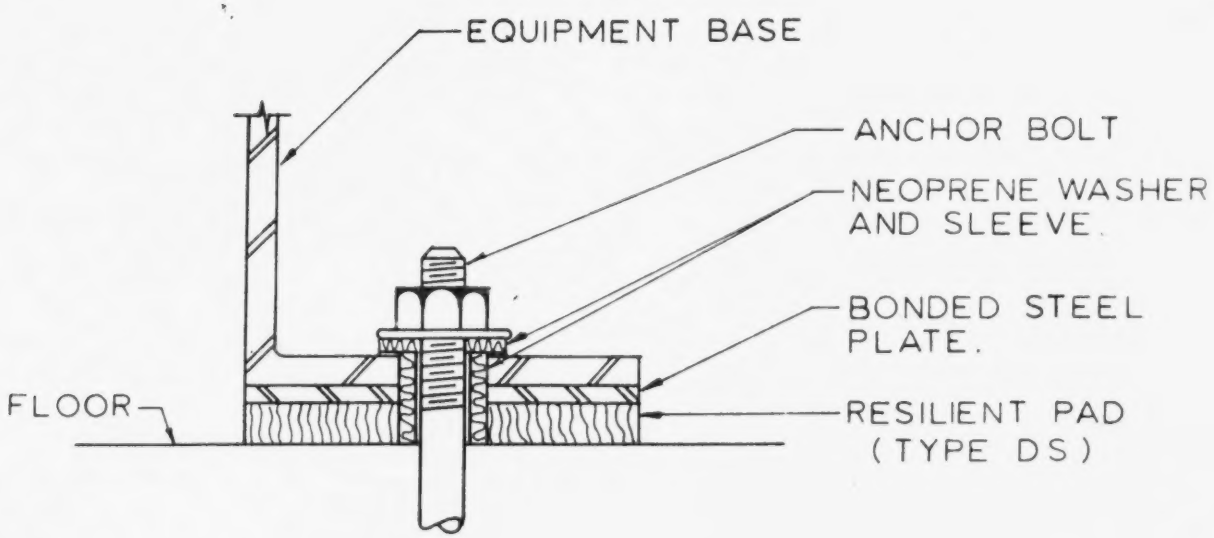
NO SCALE


ANCHOR BOLT
ANGLE CLIP (DOUBLE)
LONGITUDINAL ANGLE BRACE SLOPE 1/1
BRACE HANGER RODS OVER 3'-0" LONG WITH 2"x 2"x 3/16" VERTICAL ANGLE BRACE WELD 1" AT 24" SPACING.
TRANSVERSE ANGLE BRACE
1
1
BOLT WITH CUT WASHER
12 GA. CLIP
PIPE SLEEVE OVER BOLT.

SEISMIC BRACING FOR PIPE

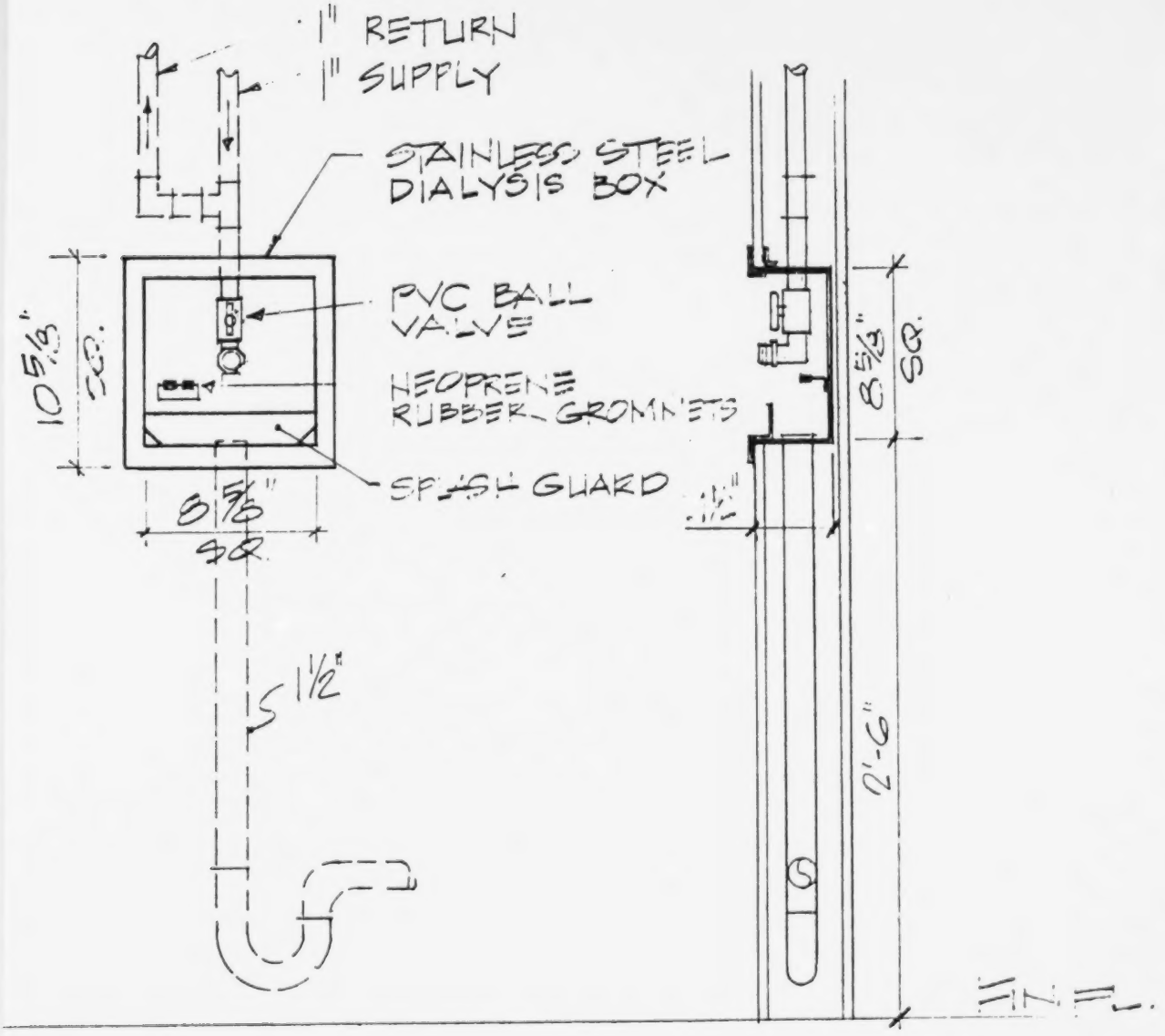
PIPE SIZE	✱ANGLE BRACE	BOLT TO ANGLE	ANGLE CLIP	ANCHOR BOLT OR INSERT
2 1/2"	2"x 2" 16 GA	3/8"	3"x 3"x 1/4"	3/8"
3",4"	2 1/2"x 2 1/2" 16 GA	3/8"	3"x 3"x 1/4"	1/2"
5",6"	2 1/2"x 2 1/2" 16 GA	1/2"	5"x 3"x 1/2"	3/4"
8"	3"x 3" 12 GA	5/8"	2-5"x 3"x 1/2"	2-5/8"
10"	3"x 3" 12 GA	3/4"	2-5"x 3"x 1/2"	2-3/4"

✱ 1 5/8" x 1 5/8" x 12 GA CHANNEL MAY BE USED



SEISMIC BRACINGS FOR EQUIPMENT RESTRAINED BY RESILIENT PADS

NOT TO SCALE



DIALYSIS BOX (P809)

NOT TO SCALE

INDEX OF SANITARY STANDARD DETAIL

400 - Sanitary Symbols and Abbreviations

401 - Sanitary Sewer Manhole

402 - Storm Sewer Manhole & Type "C" Inlet

403 - Type "A" Curb Inlet

404 - Type "B" Curb Inlet

406 - Type "D" Yard Inlet

410 - Type "D" Endwall

411 - Type "E" Endwall

415 - Dry Well

416 - Concrete Pipe Cradle

417 - Pipe Sleeve

420 - Pier Detail

425 - Air Relief Valve Manhole

430 - Type "A" Grease Trap Detail

431 - Type "B" Grease Trap Detail

435 - Oil Trap

439 - Single Sodium Cycle Water Softening Piping Diagram

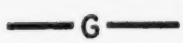
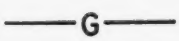
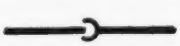
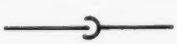
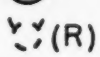
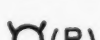
440 - Duplex Sodium Cycle Water Softening Piping Diagram

441 - Wet Salt Storage Basins

442 - Wet Salt Storage Basins (Concrete Trough & Cover)

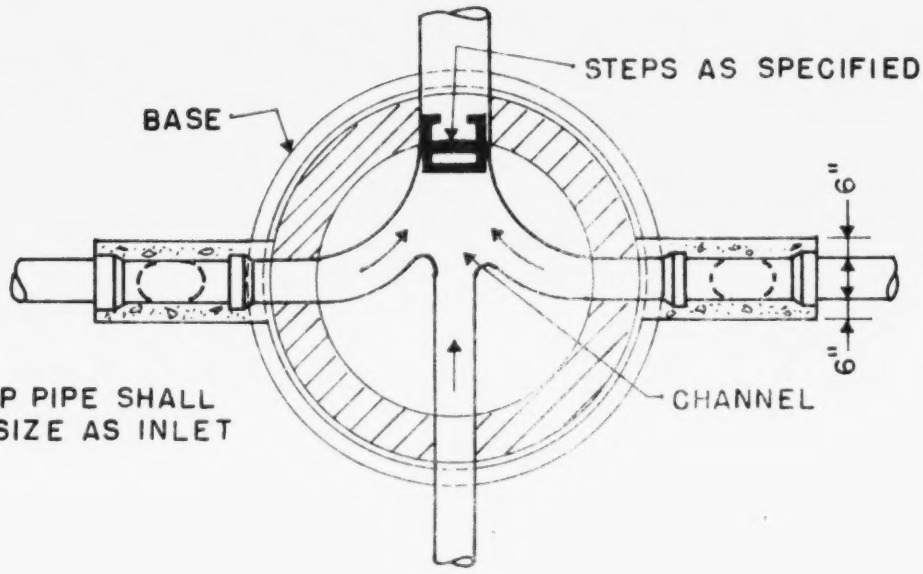
443 - Brine Measuring Tank

SANITARY SYMBOLS & ABBREVIATIONS

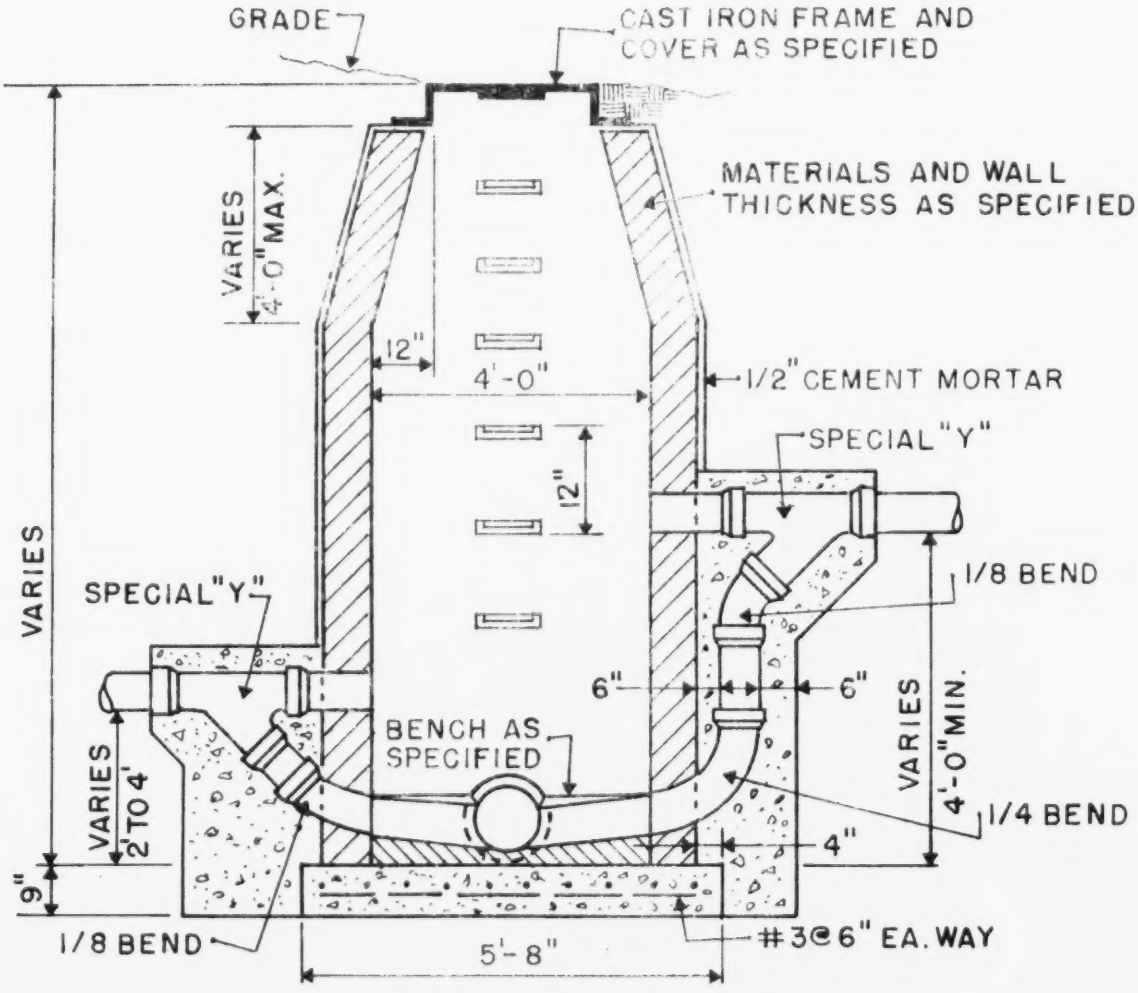
	NEW	EXISTING
SANITARY SEWER		
STORM SEWER		
WATER MAIN		
GAS MAIN		
MANHOLE		
DROP MANHOLE		
INLET		
FIRE HYDRANT		
CAP OR PLUG		
RISE OR DROP		
INDICATOR POST & VALVE		
GATE VALVE		
CHECK VALVE		
PIPING OR APPURTENANT STRUCTURES TO BE ABANDONED		
NEW CONNECTION		
FIRE HYDRANT TO BE RELOCATED		
RELOCATED FIRE HYDRANT		

ST	STORM
SAN	SANITARY
INL	INLET
PIV	INDICATOR POST & VALVE
W	WATER
CO	CLEAN OUT
DS	DOWNSPOUT
EL	ELEVATION
INV	INVERT
CI	CAST IRON
MH	MANHOLE
FH	FIRE HYDRANT
SSD	SUB SOIL DRAIN
EX	EXISTING
ABAN	ABANDON

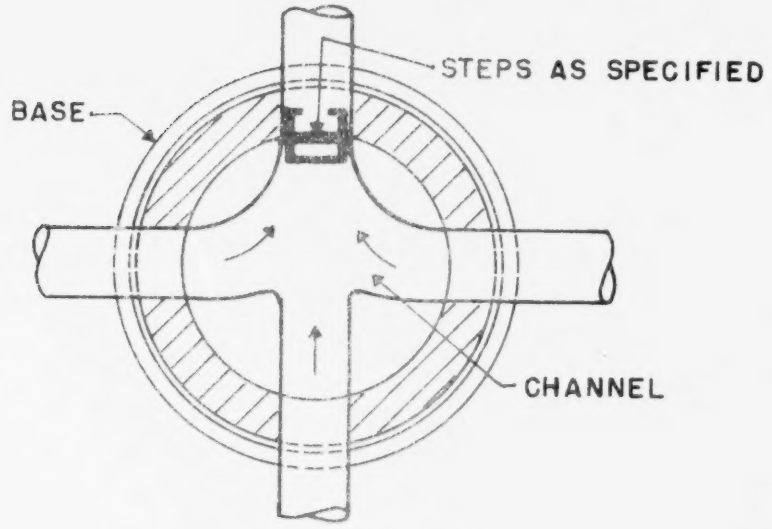
SANITARY SEWER MANHOLE



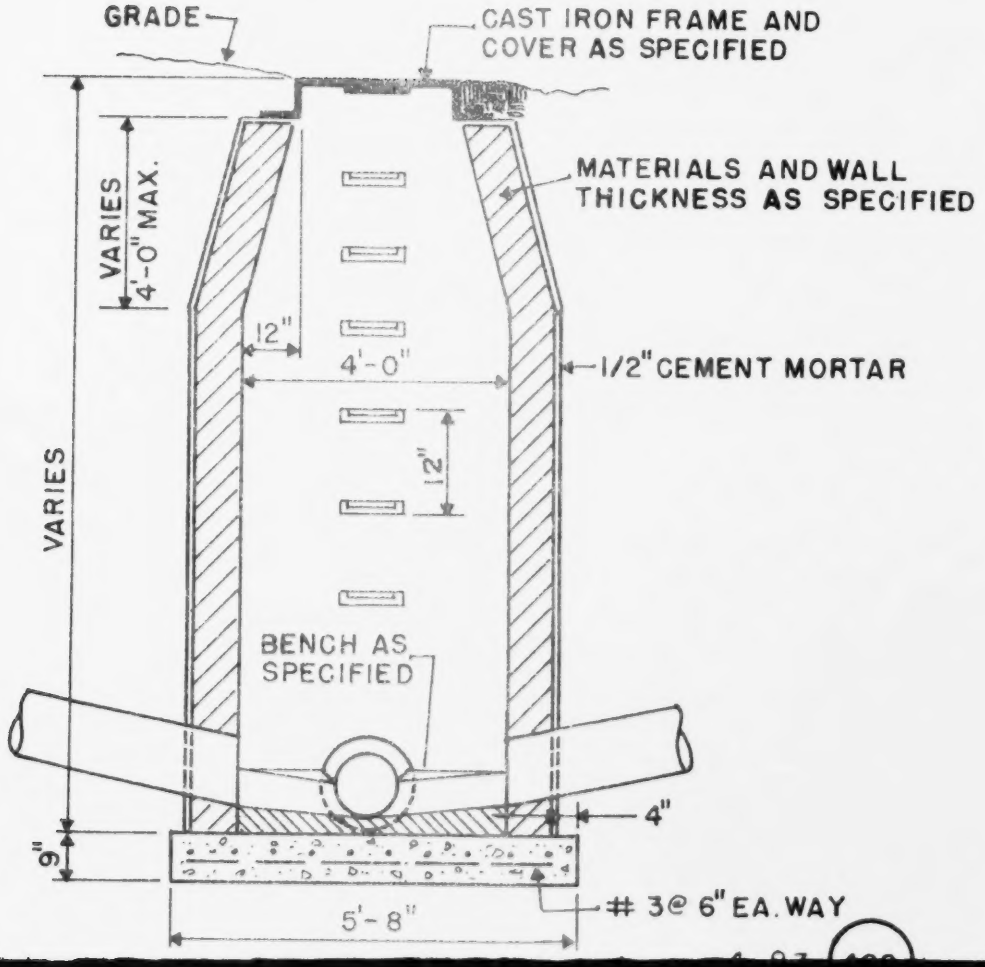
NOTE: DROP PIPE SHALL BE SAME SIZE AS INLET PIPE.



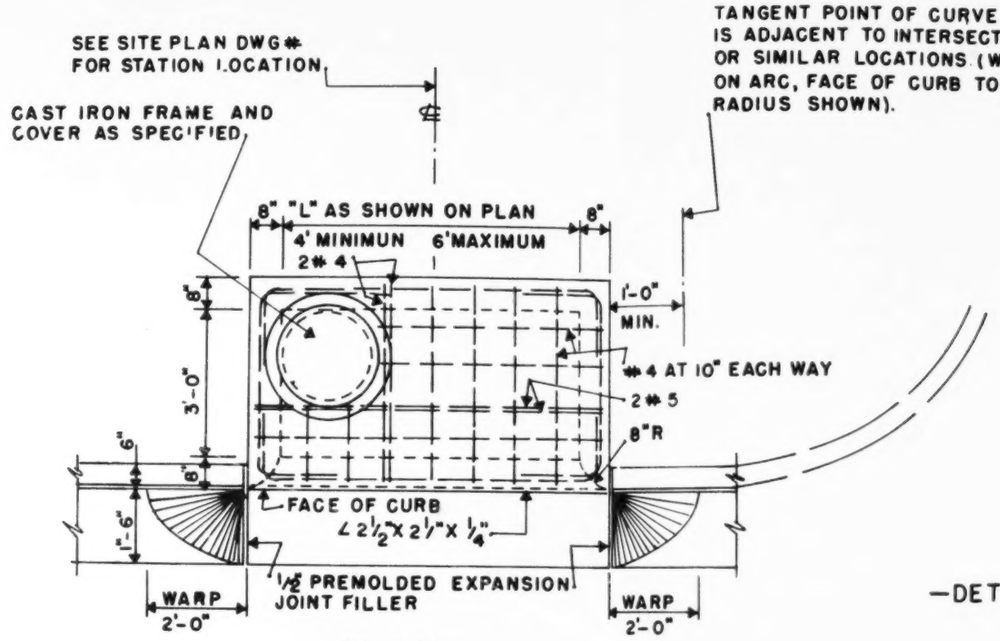
SEWER MANHOLE AND TYPE "C" INLET



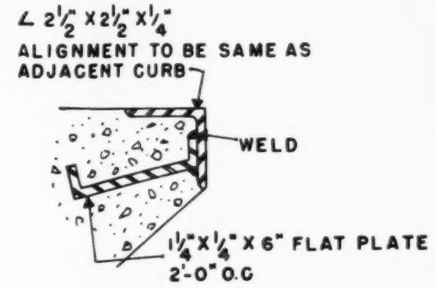
-PLAN-



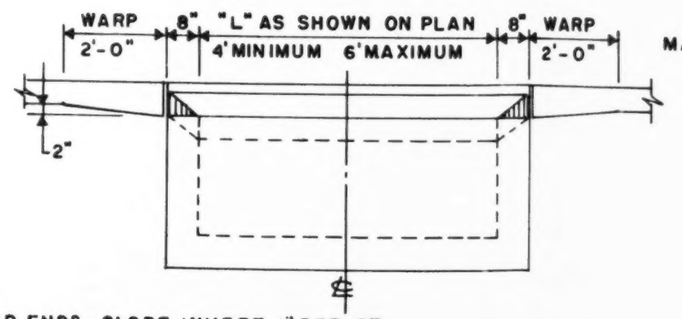
TYPE "A" CURB INLET


SEE SITE PLAN DWG # FOR STATION LOCATION.
CAST IRON FRAME AND COVER AS SPECIFIED.
TANGENT POINT OF CURVE WHERE INLET IS ADJACENT TO INTERSECTION OF ROAD OR SIMILAR LOCATIONS (WHEN LOCATED ON ARC, FACE OF CURB TO CONFORM TO RADIUS SHOWN).
8" "L" AS SHOWN ON PLAN 8"
4' MINIMUN 6'MAXIMUM
2 # 4
8"
3'-0"
1'-0" MIN.
4 AT 10" EACH WAY
2 # 5
8"R
6"
8"
1'-6"
FACE OF CURB
∠ 2½"X2½"X ¼"
½" PREMOLDED EXPANSION JOINT FILLER
WARP 2'-0"
WARP 2'-0"

—PLAN—

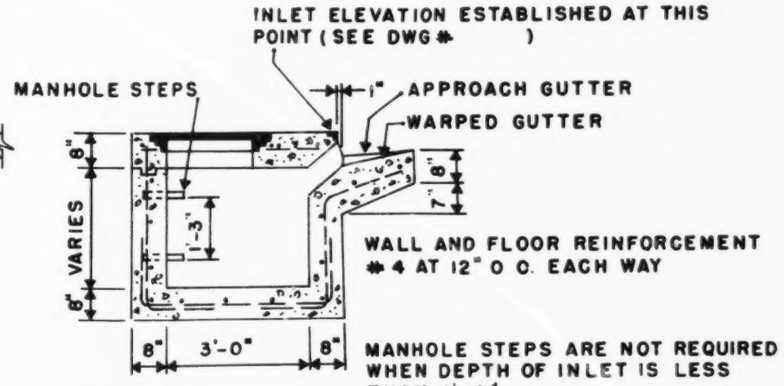


—DETAIL OF NOSING—



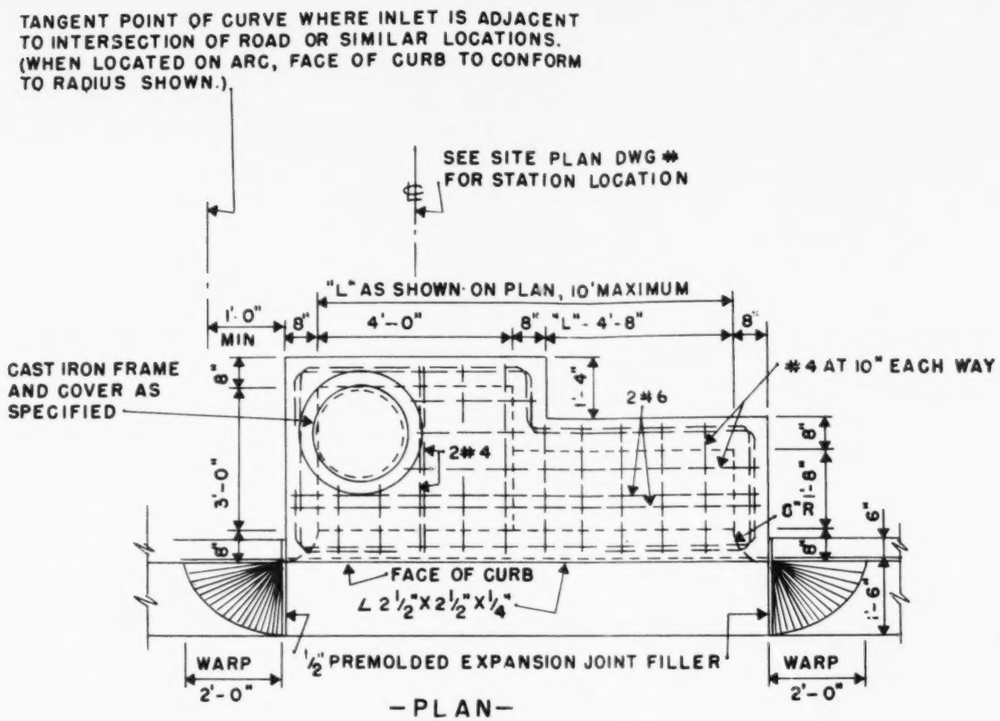
ON DEAD ENDS- SLOPE INVERT 1" PER FT TO OUTLET. IF THRU FLOW IS USED- FORM INVERT SIMILAR TO MANHOLE

—ELEVATION—

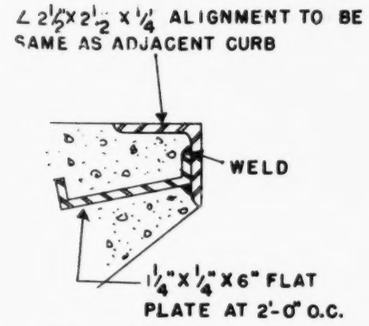


—SECTION—

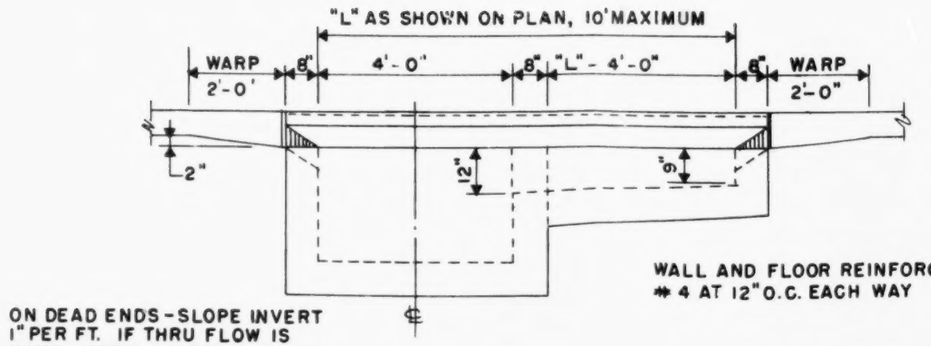
TYPE "B" CURB INLET


TANGENT POINT OF CURVE WHERE INLET IS ADJACENT TO INTERSECTION OF ROAD OR SIMILAR LOCATIONS. (WHEN LOCATED ON ARC, FACE OF CURB TO CONFORM TO RADIUS SHOWN.)
SEE SITE PLAN DWG # FOR STATION LOCATION
"L" AS SHOWN ON PLAN, 10' MAXIMUM
1'-0" MIN
8"
4'-0"
8"
"L" - 4'-8"
8"
CAST IRON FRAME AND COVER AS SPECIFIED
#4 AT 10" EACH WAY
2#6
2#4
3'-0"
6"R
FACE OF CURB
∠ 2½"x2½"x¼"
½" PREMOLDED EXPANSION JOINT FILLER
WARP 2'-0"
WARP 2'-0"

— PLAN —

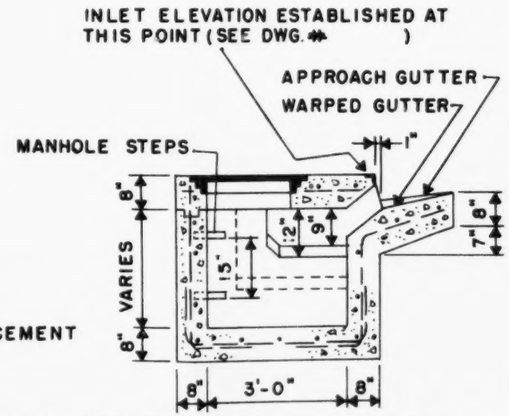


— DETAIL OF NOSING —



ON DEAD ENDS - SLOPE INVERT 1" PER FT. IF THRU FLOW IS USED - FORM INVERT SIMILAR TO MANHOLE.

— ELEVATION —



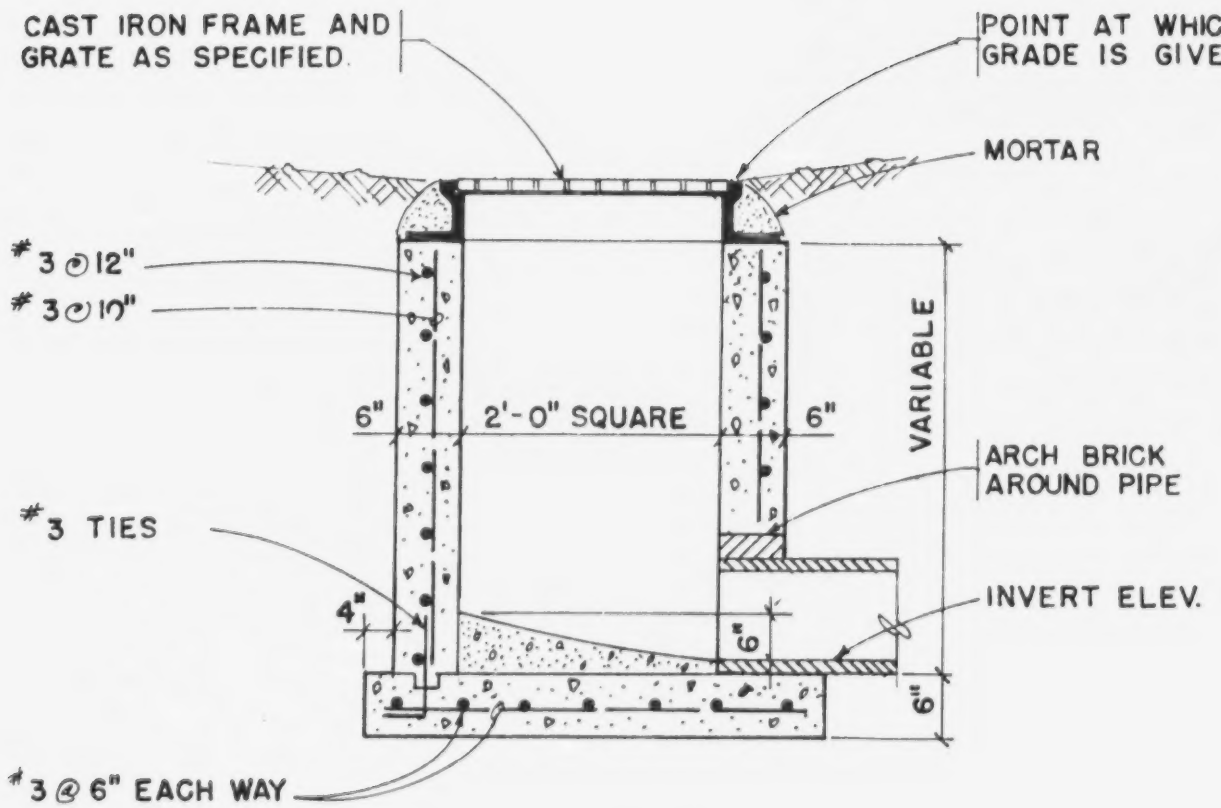
WALL AND FLOOR REINFORCEMENT # 4 AT 12" O.C. EACH WAY

MANHOLE STEPS ARE NOT REQUIRED WHEN DEPTH OF INLET IS LESS THAN 4-0"

— SECTION —

NOTE:

BOTTOM OF FOOTING TO BE A MINIMUM OF 1'-0" BELOW FROST LINE.

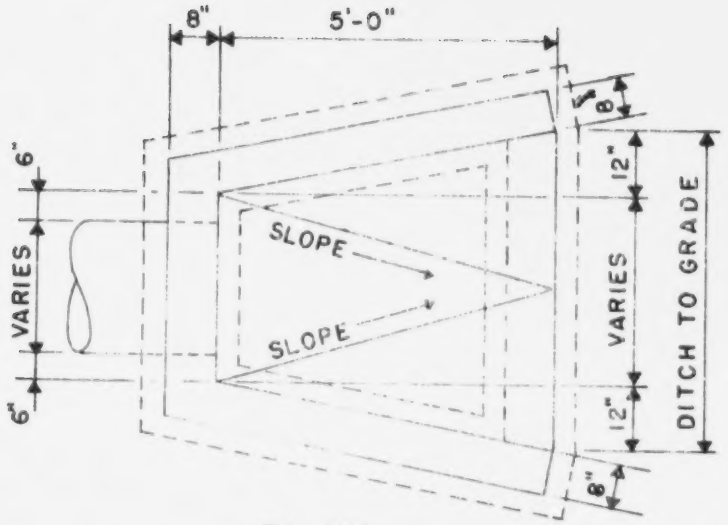


TYPE "D" INLET

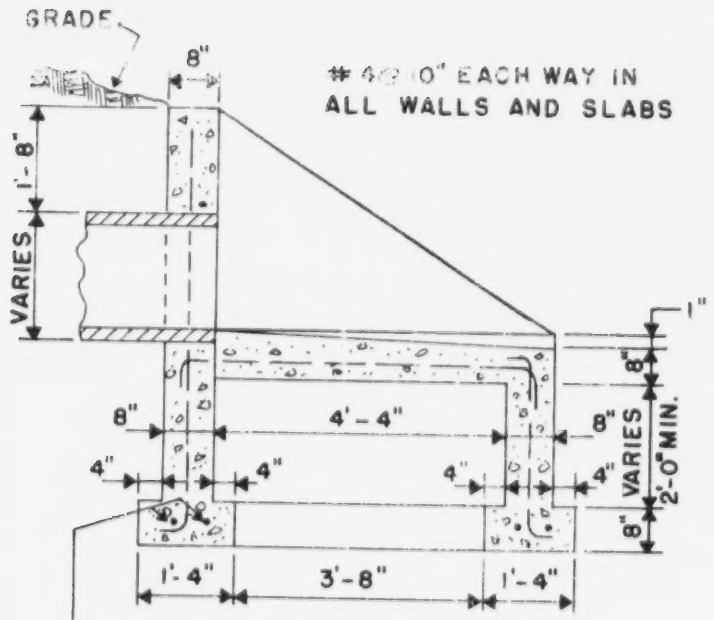
NOT TO SCALE

4-83 406

TYPE "D" ENDWALL

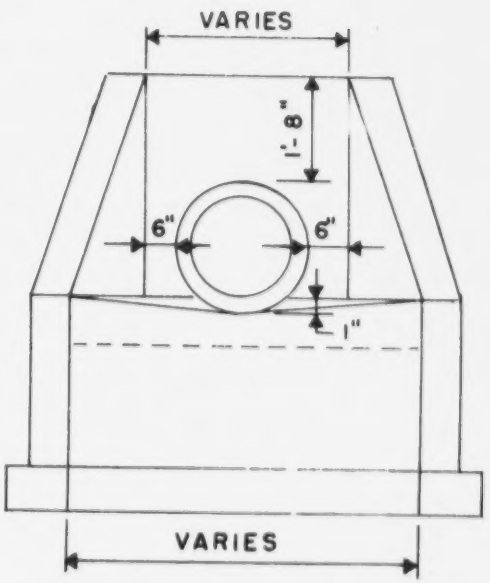


—PLAN—



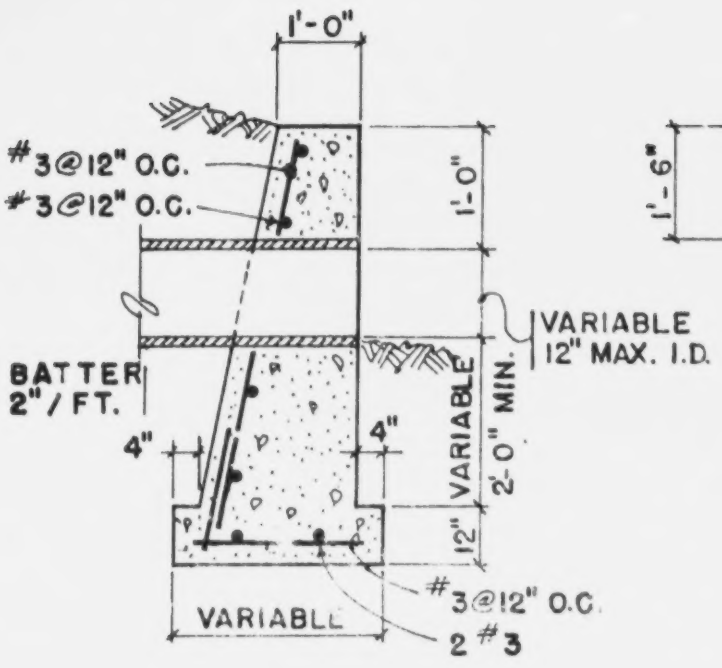
—SECTION—

2-#4'S CONT
IN FOOTINGS

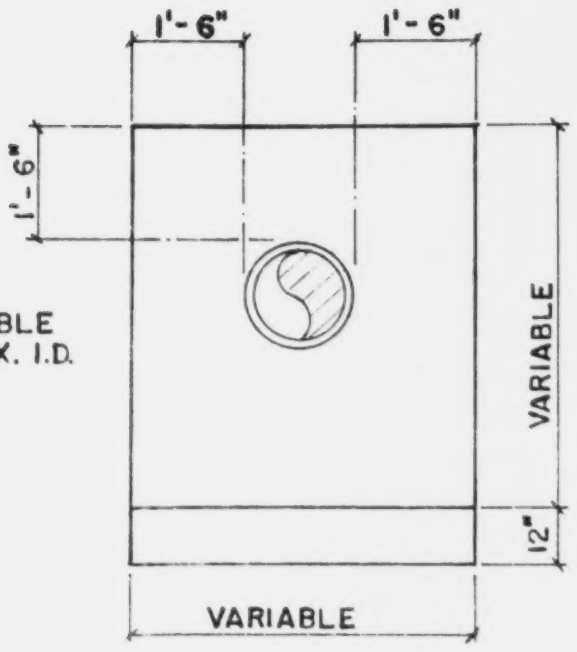


—ELEVATION—

NOTE: BOTTOM OF FOOTINGS SHALL BE AT LEAST 1'-0" BELOW FROST LINE



SECTION



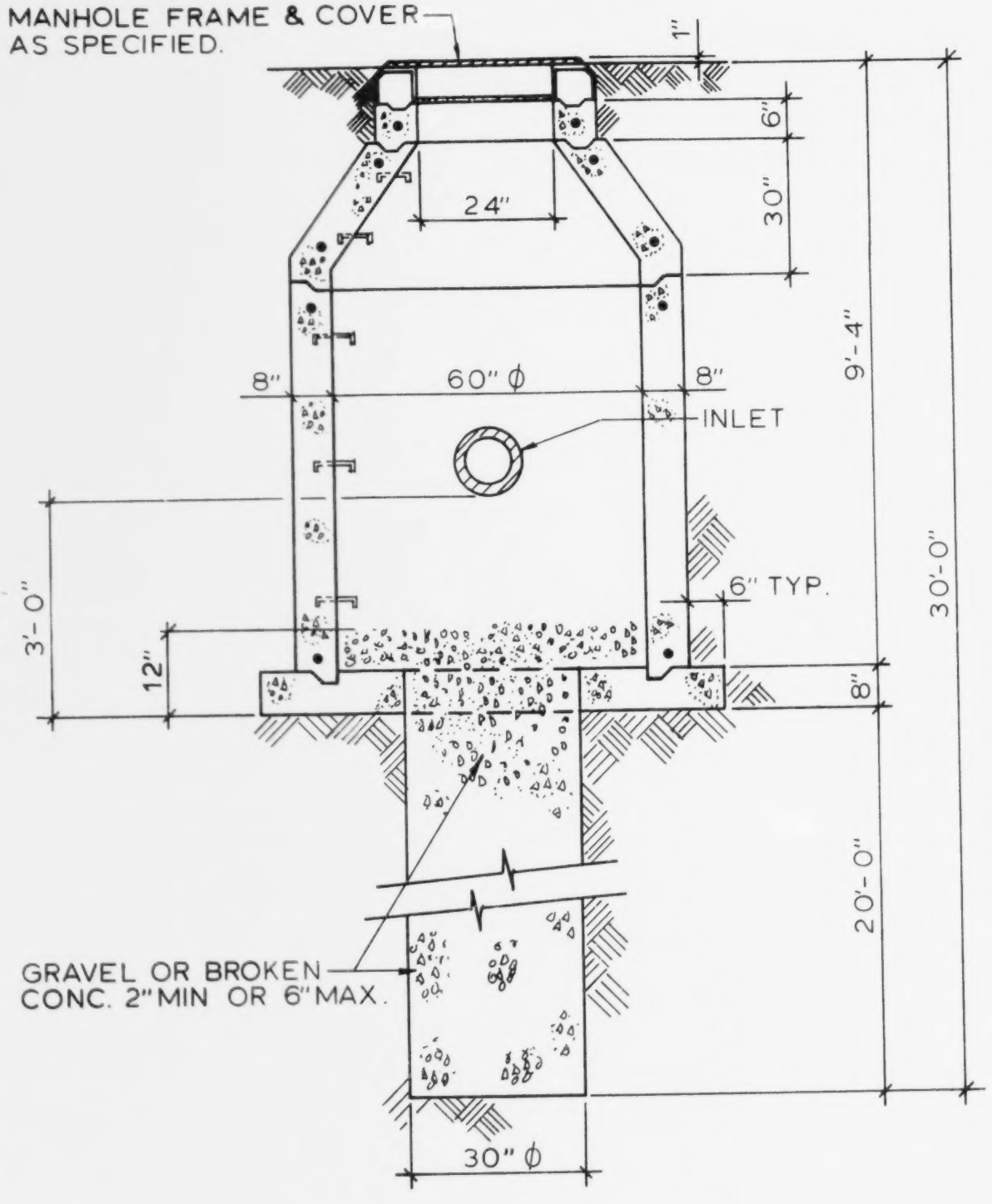
ELEVATION

NOTES:

1. BOTTOM OF FOOTING TO BE A MINIMUM OF 1'-0" BELOW FROST LINE.
2. ALL CONCRETE SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI, 28 DAYS WITH AIR ENTRAINMENT.
3. REINFORCING STEEL SHALL BE ASTM A615, GRADE. 40.
4. CORNER REINFORCING BARS IN ACCORDANCE WITH ACI DETAIL MANUAL.

TYPE "E" ENDWALL

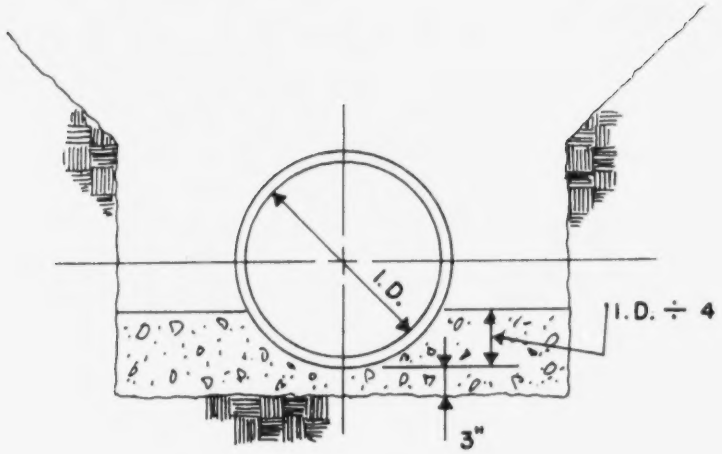
NOT TO SCALE



TYPICAL DRYWELL

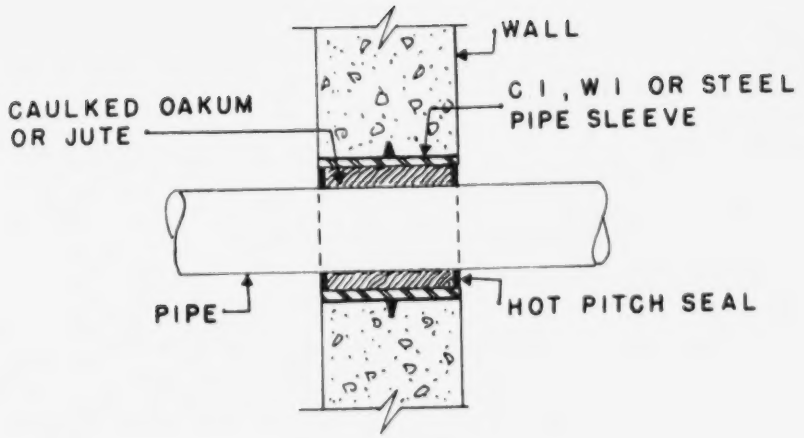
NOT TO SCALE

CONCRETE PIPE CRADLE



NOTE: WIDTH OF TRENCH SHALL BE A MAXIMUM OF 24" FOR PIPE 12" AND UNDER AND NOT MORE THAN 4/3 OUTSIDE DIA. PLUS 8" FOR PIPE OVER 12".

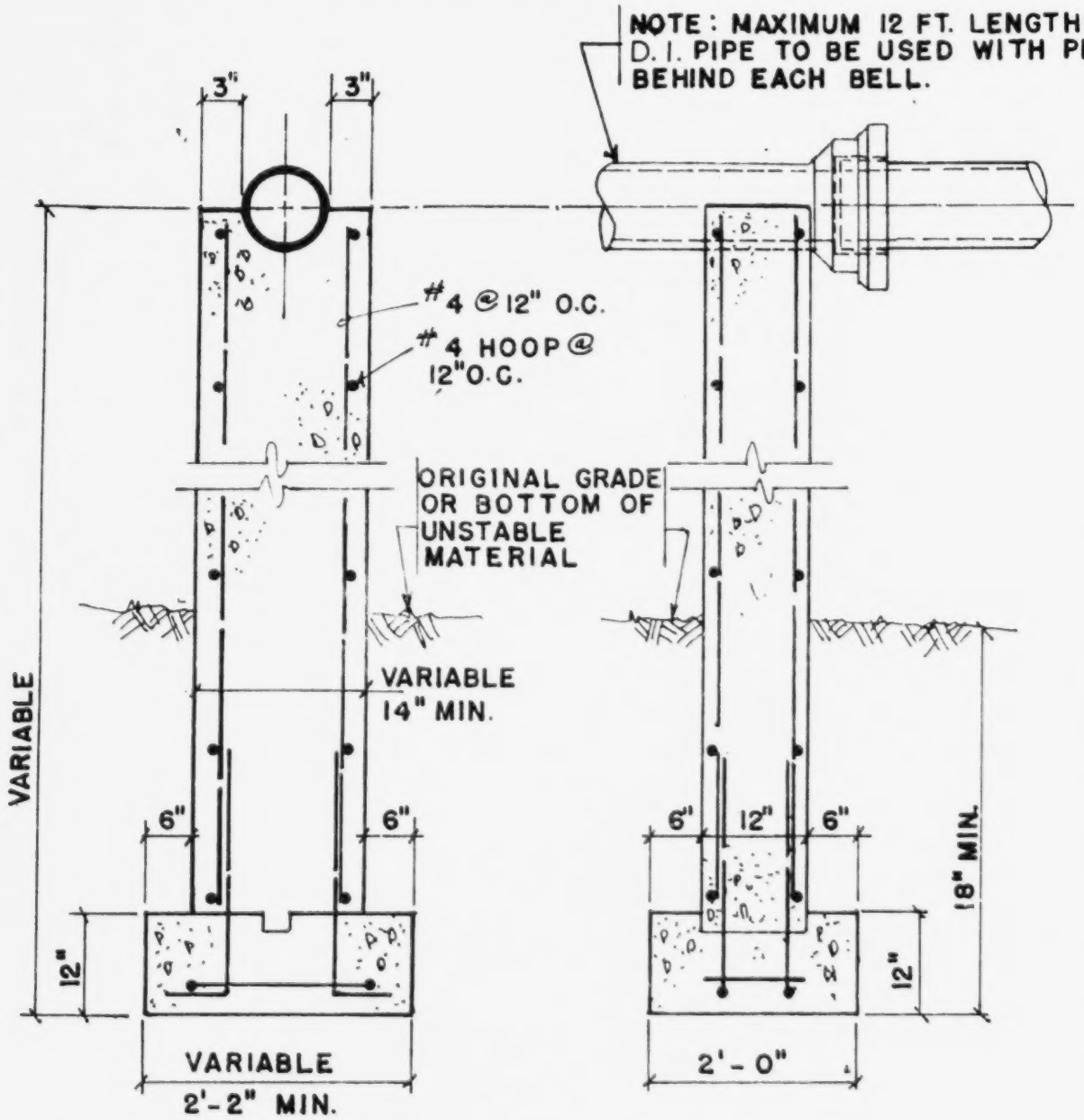
PIPE SLEEVE



—SECTION—

4-83 (417)

NOTE: DIMENSIONS AND REINFORCING INDICATED ARE MINIMUM REQUIREMENTS. PIERS SHOULD BE DESIGNED INDIVIDUALLY TO SUIT JOB CONDITIONS.

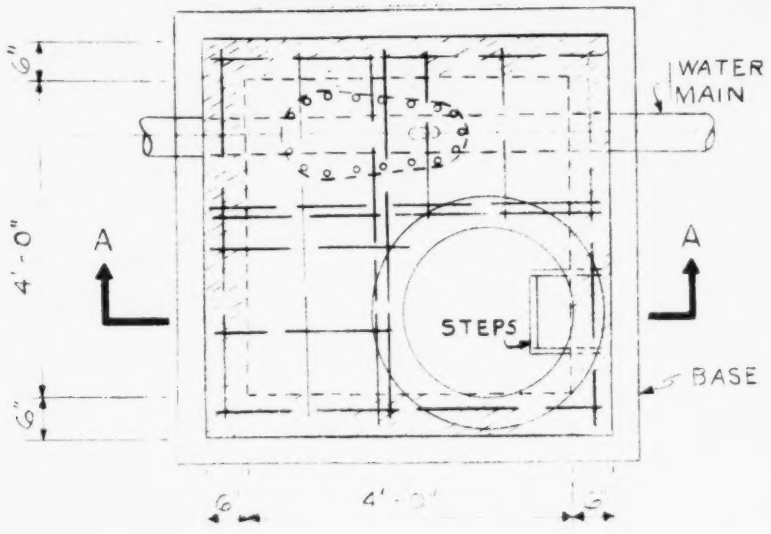


FRONT ELEVATION SIDE ELEVATION

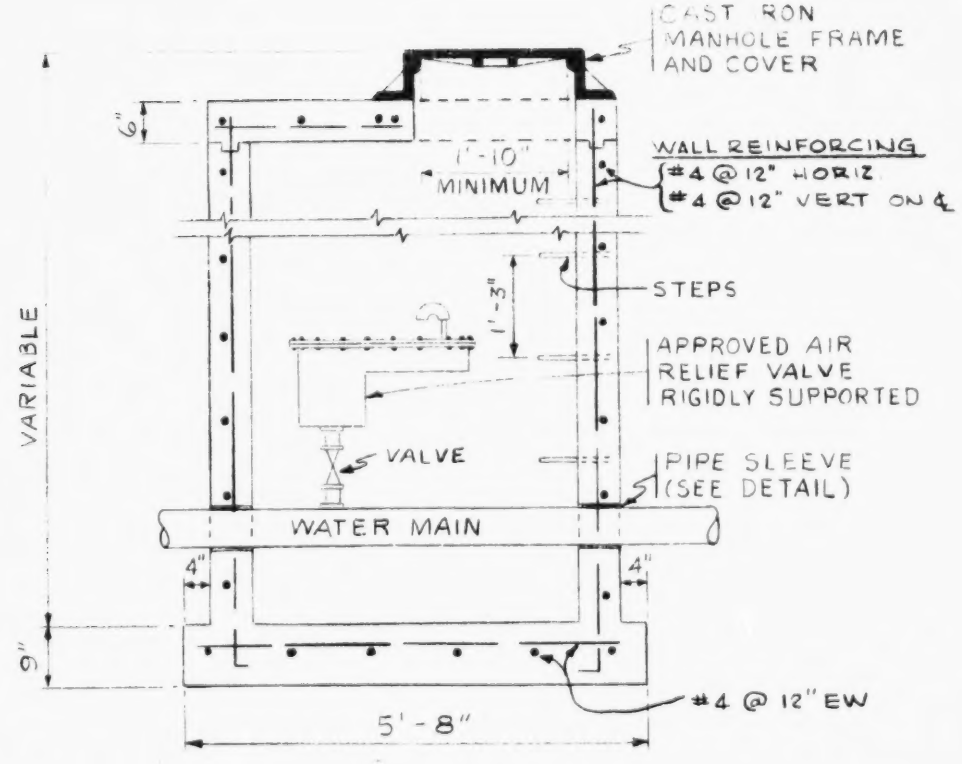
PIER DETAIL

(FOR LINES LAID IN FILL OR OTHER UNSTABLE MATERIAL)
NOT TO SCALE

4-63 (420)



PLAN



SECTION A-A

AIR RELIEF VALVE MANHOLE

NO SCALE

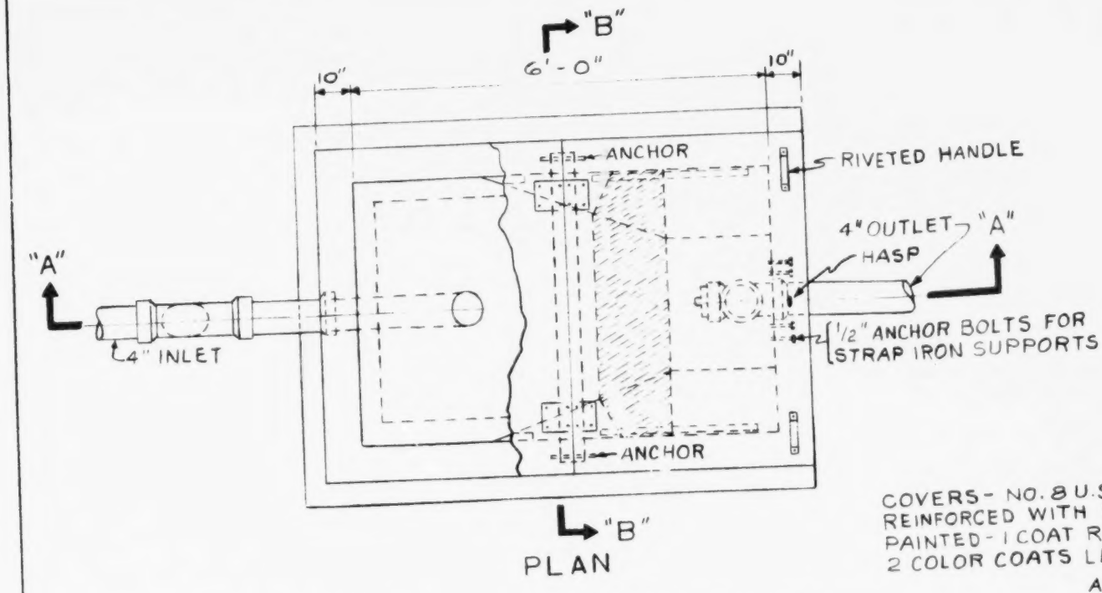
4-83

425

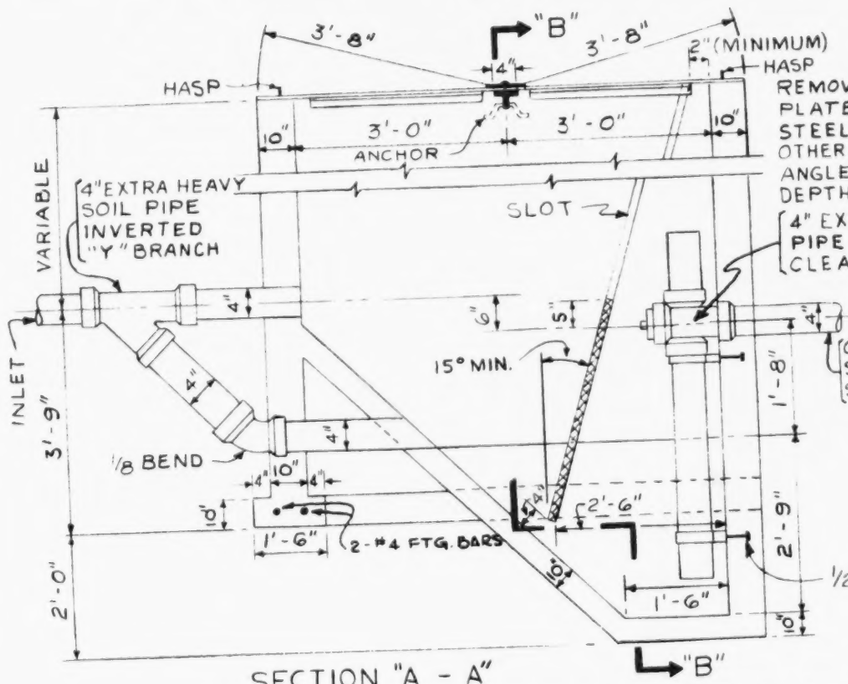
NOTE:

REINFORCING STEEL SHALL BE AS FOLLOWS:

1.- #4 BARS EA. WAY & EA. FACE
2.- PROVIDE 2" OF COVER ON BARS.



PLAN



SECTION "A - A"

COVERS - NO. 8 U.S. STD. GA. STEEL PLATE REINFORCED WITH 1 1/2" x 1 1/2" x 3/16" ANGLES. PAINTED - 1 COAT RED LEAD AND OIL AND 2 COLOR COATS LEAD AND OIL PAINT.

A.I.S.C. SECTION ST 3B 6.0#/FT. - 4'-8" LONG

REMOVABLE DEFLECTOR PLATE IN GROOVE, MAY BE STEEL, SLATE, TRANSITE OR OTHER SUITABLE MATERIAL. ANGLE DETERMINED BY DEPTH OF TANK.

4" EXTRA HEAVY SOIL PIPE CROSS WITH BRASS CLEANOUT PLUG.

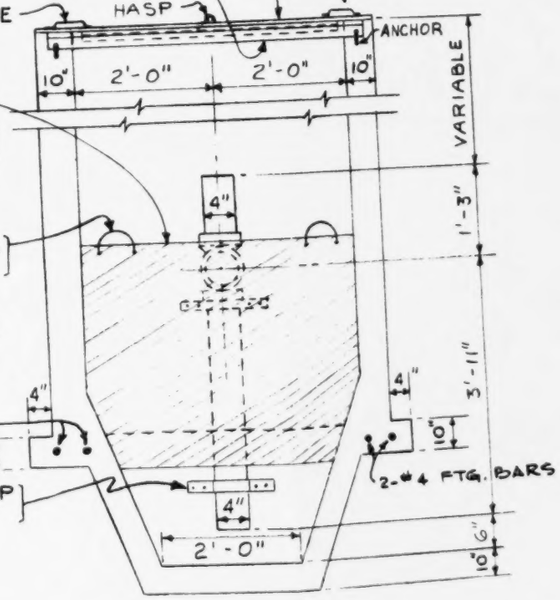
1/2" ϕ LIFTING HANDLE BOLTED TO PLATE.

OUTLET MAY BE AS SHOWN OR GO TO EITHER SIDE AS REQUIRED.

2-#4 FTG. BARS

(2) 1 1/2" x 3/16" STRAP IRON SUPPORTS.

1/2" BOLTS-ANCHORED



SECTION "B - B"

TYPE "A" GREASE TRAP DETAIL

NO SCALE

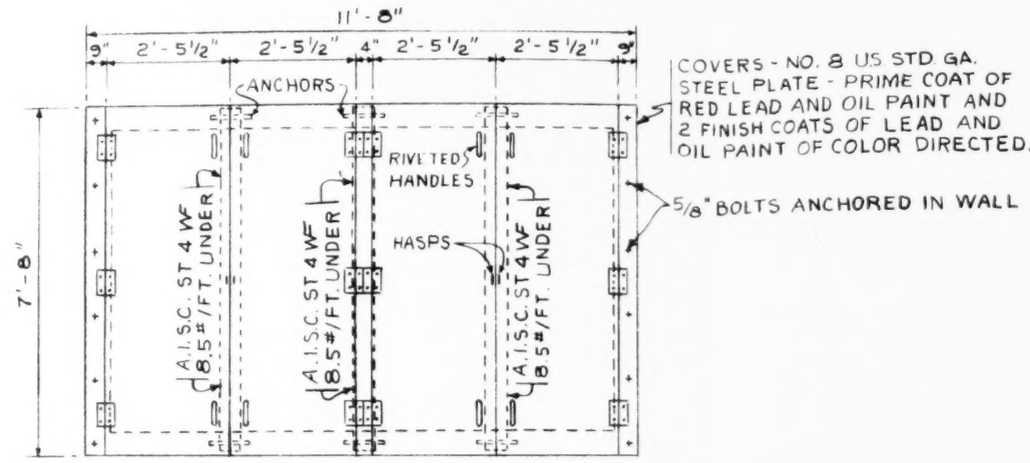
430

4-83

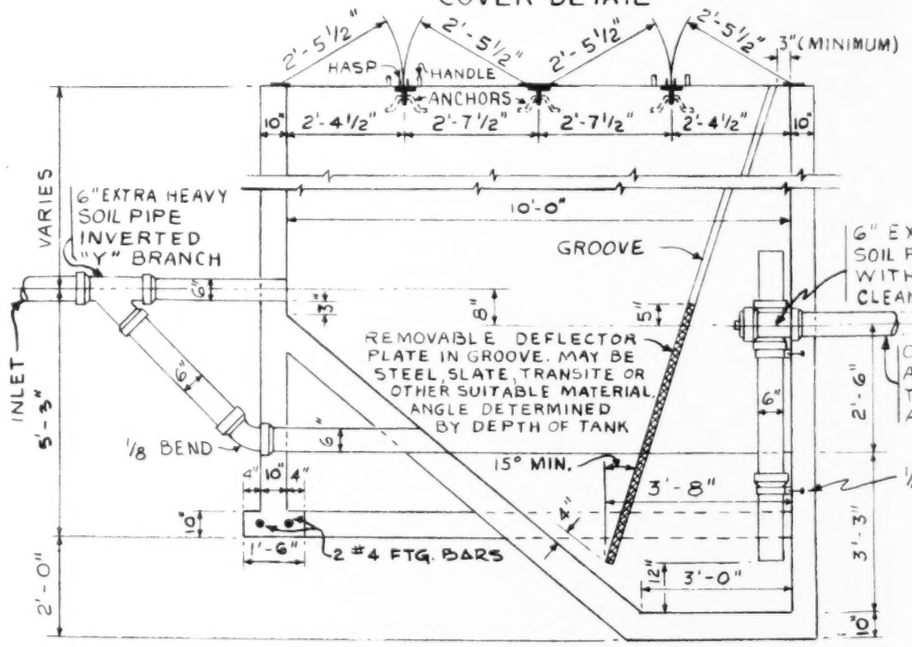
NOTE:

REINFORCING STEEL SHALL BE AS FOLLOWS:

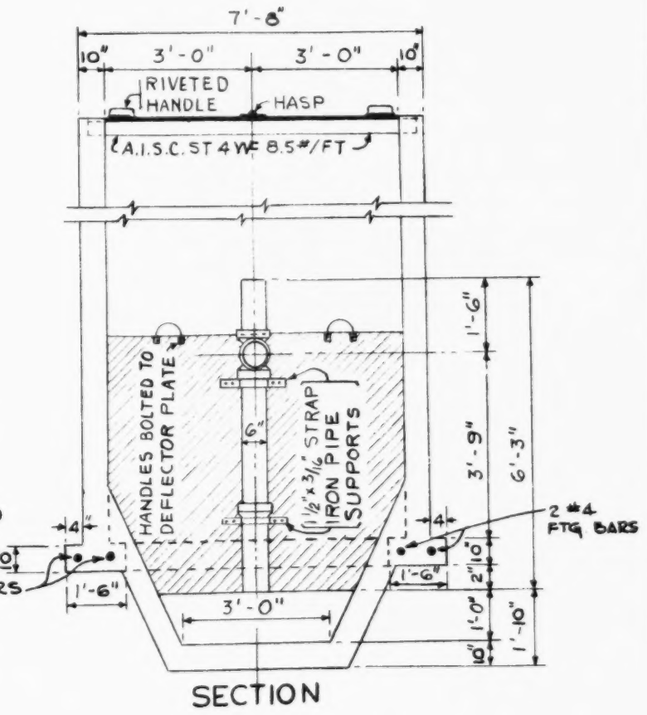
1.- #4 @ 12" EA. WAY & EA. FACE.
2.- PROVIDE 2" OF COVER ON BARS.



COVER DETAIL



SECTION



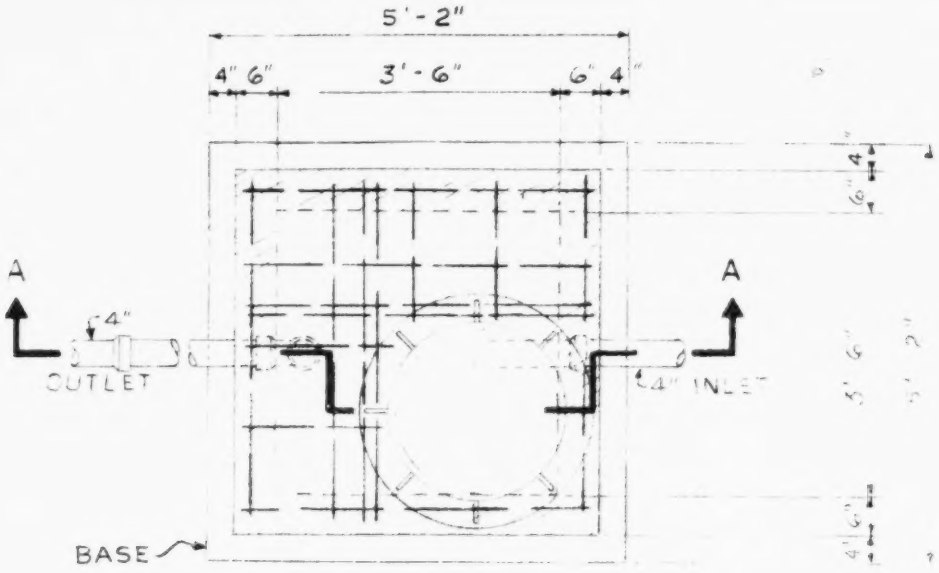
SECTION

TYPE "B" GREASE TRAP DETAIL

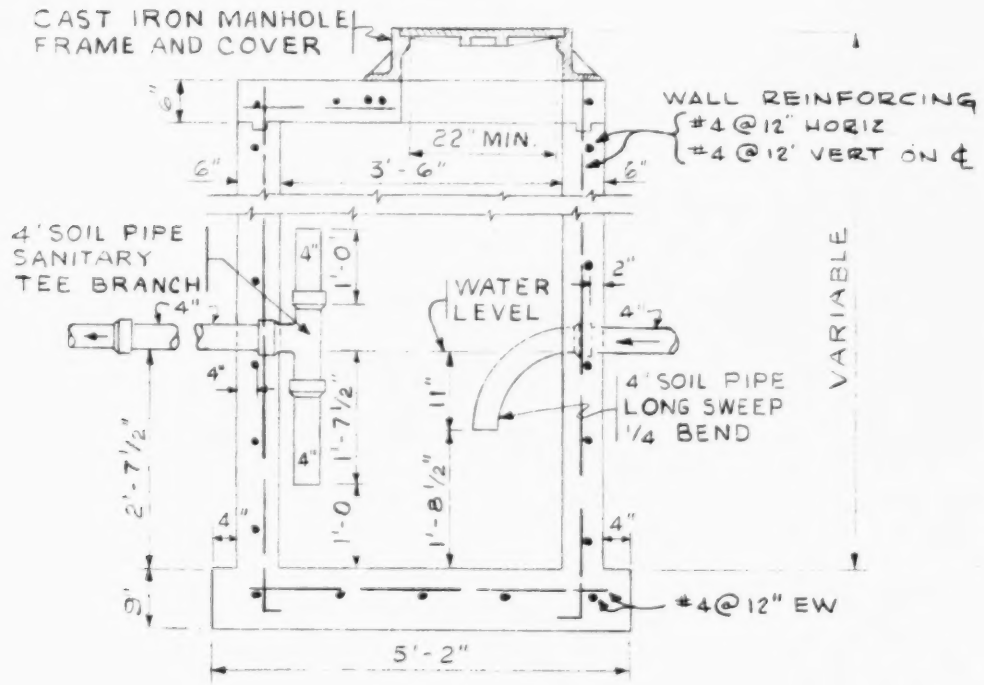
NO SCALE

431

4-83



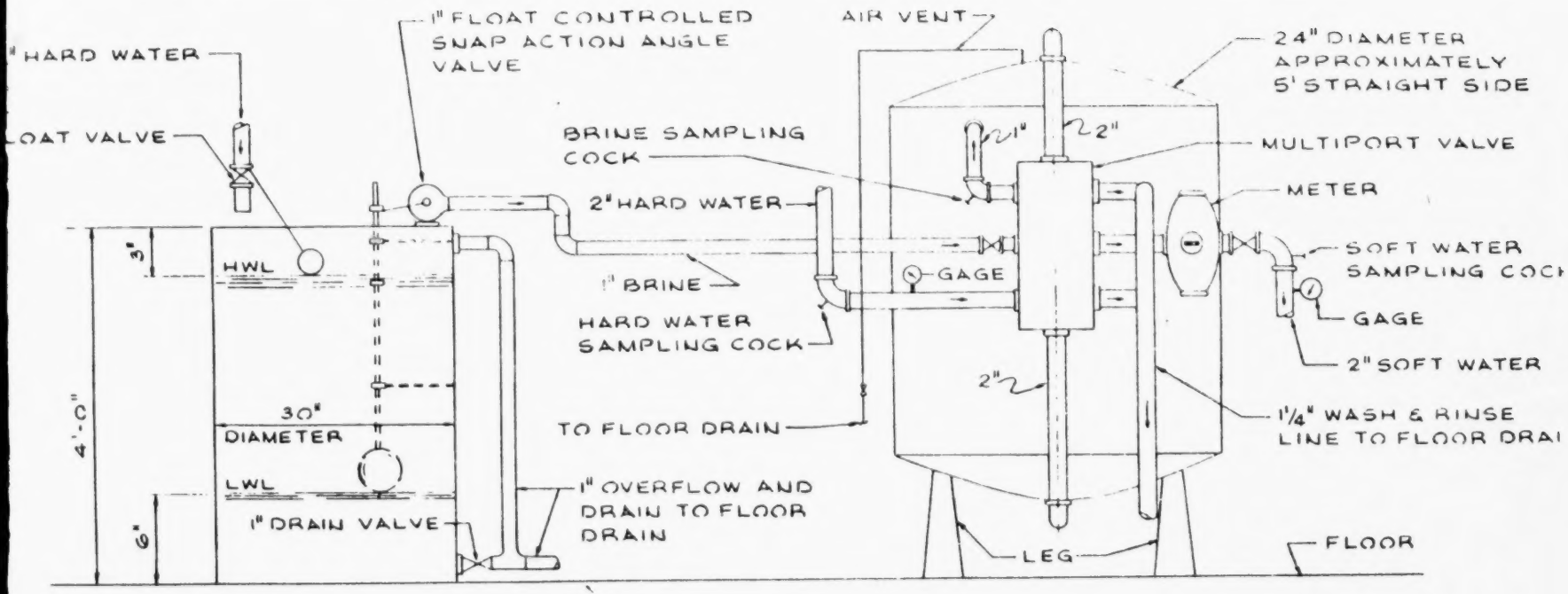
PLAN



SECTION A-A

OIL TRAP

NO SCALE



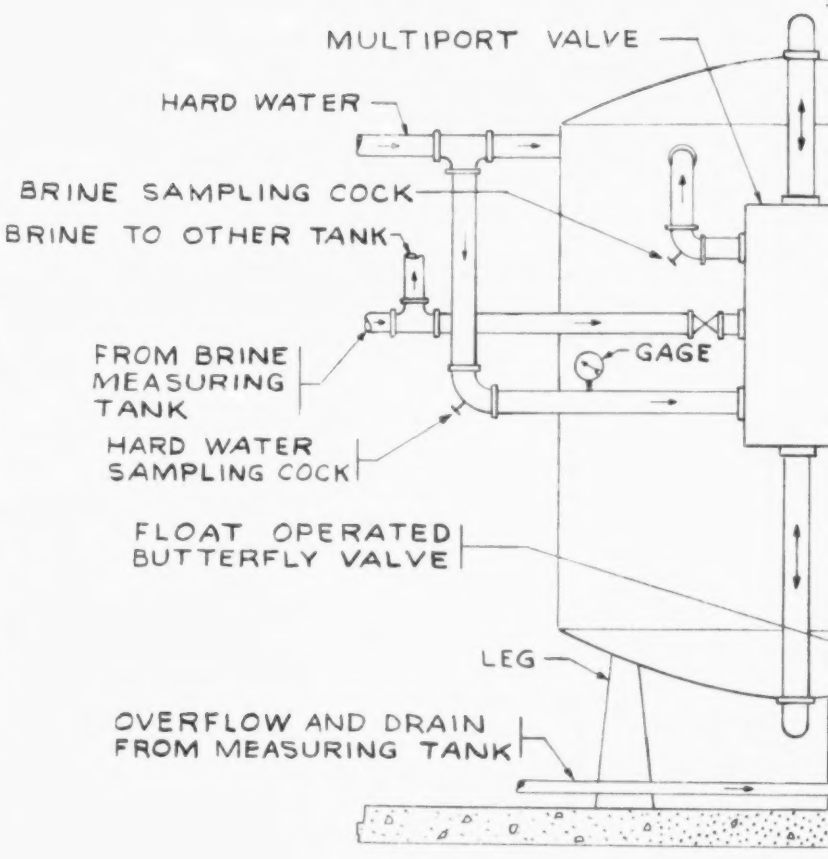
COMBINATION BRINE MEASURING AND SALT STORAGE TANK

NO SCALE

SODIUM CYCLE SOFTENER

NO SCALE

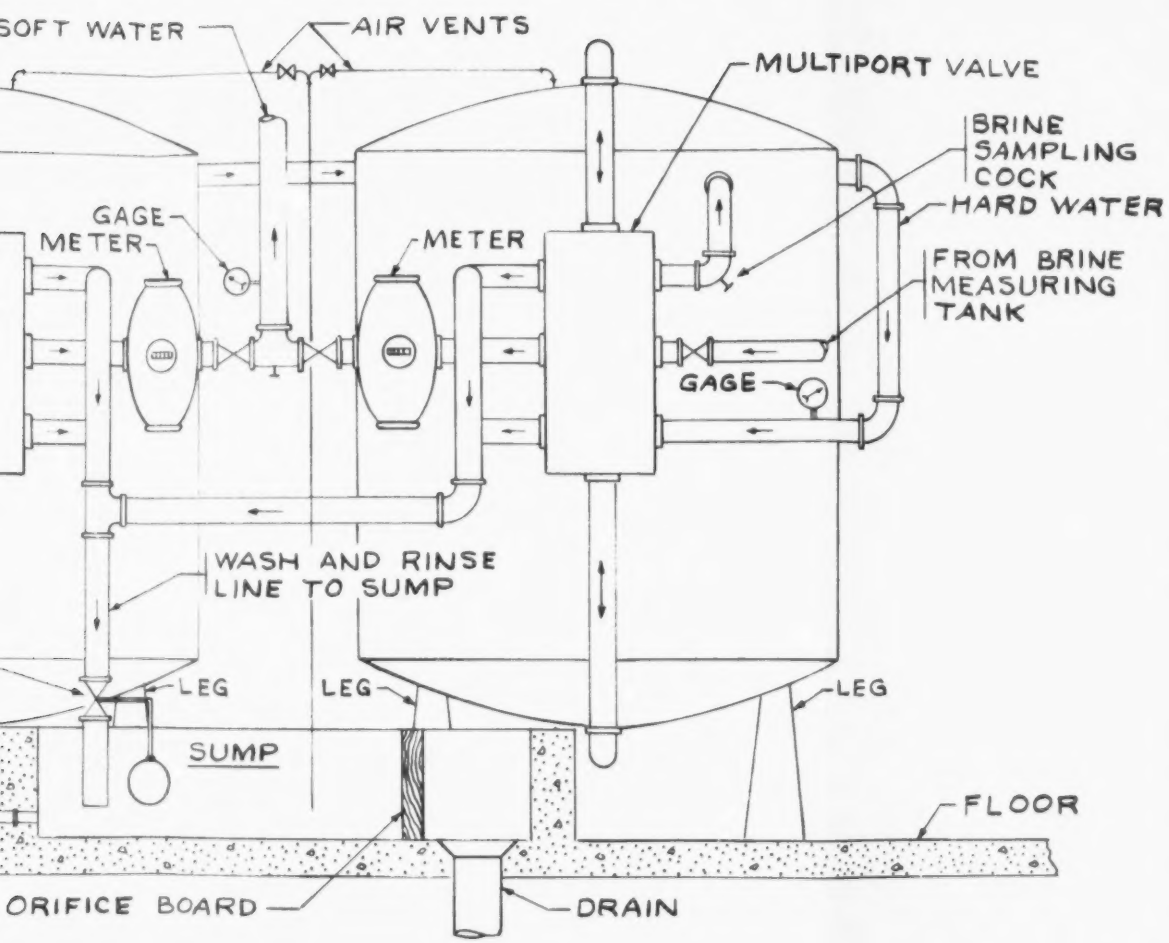
NOTE:
ANCHOR SOFTENER AND BRINE MEASURING AND SALT STORAGE TANK TO FLOOR.



DUPLEX SO

SOFTENING

NOT



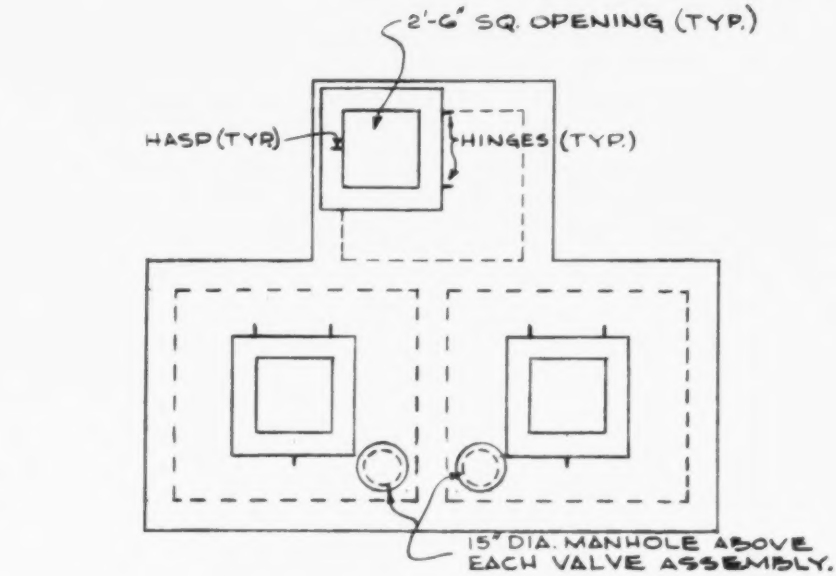
DIUM CYCLE WATER

PIPING DIAGRAM

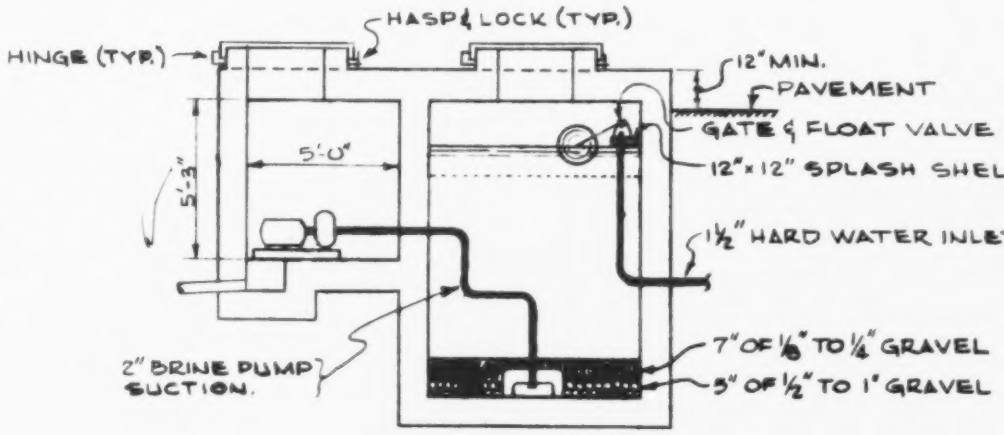
TO SCALE

440

NOTE:
MAIN SOFTENER PIPING



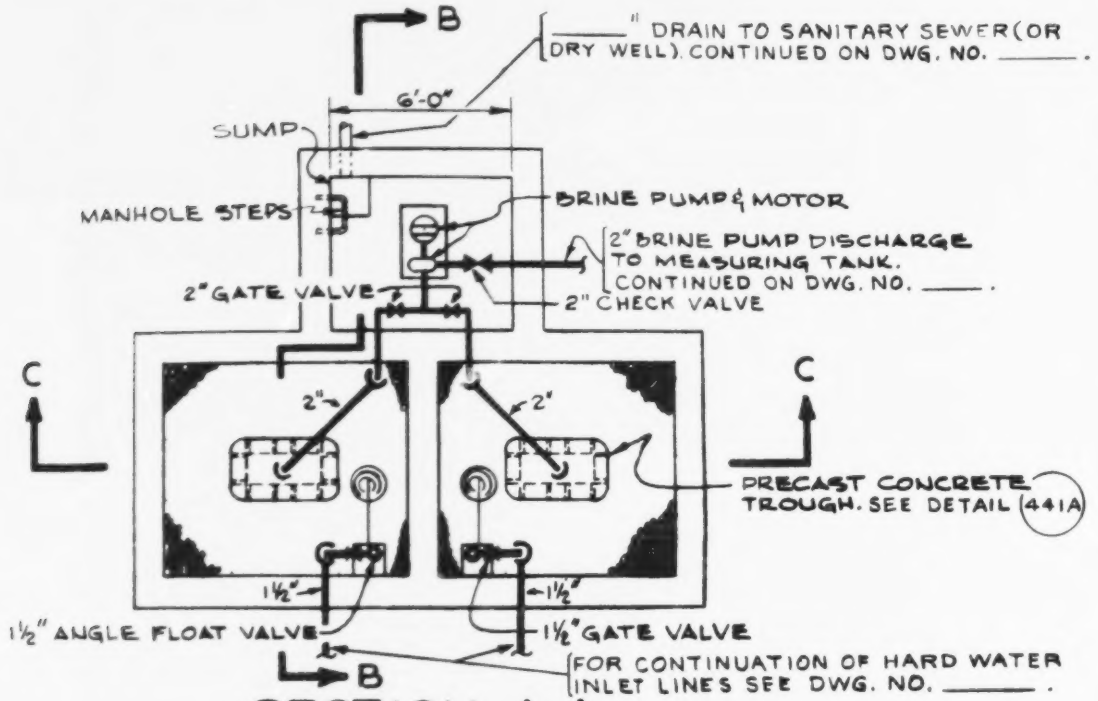
PLAN OF TOP



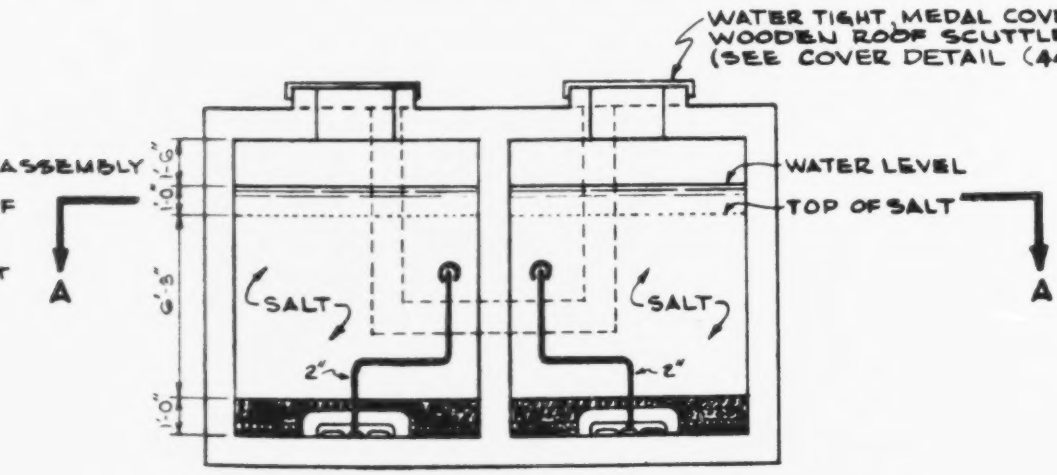
SECTION B-B

WET SALT STORAGE BASINS

NOT TO SCALE

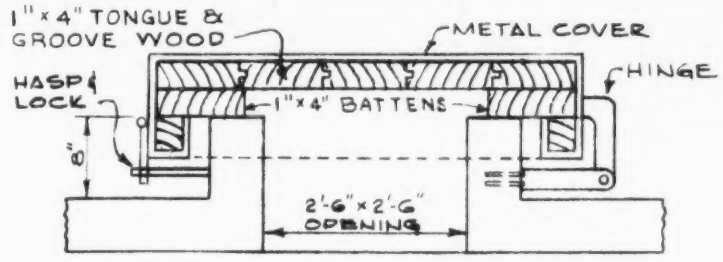


SECTION A-A

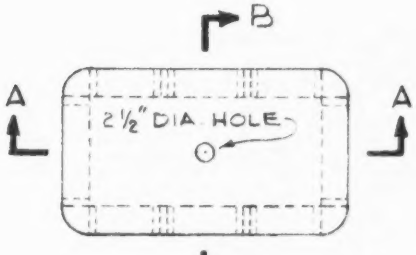


SECTION C-C

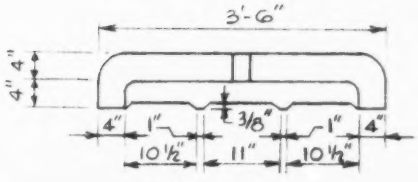
NOTE:
FOR STRUCTURAL DETAILS, SEE DWG. NO. .



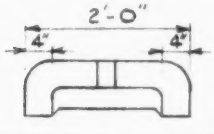
COVER DETAIL
NO SCALE



PLAN



SECTION A-A



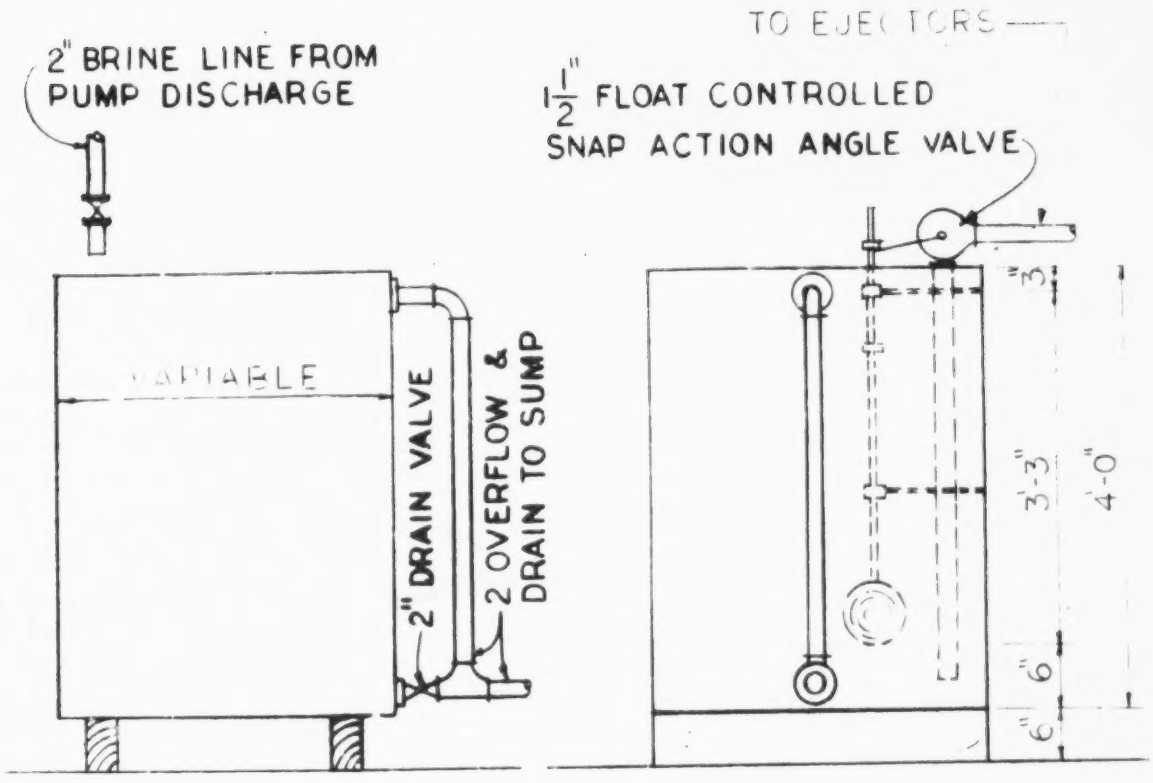
SECTION B-B

SEE PLAN & DETAILS (441)

PRECAST CONCRETE TROUGH

WET SALT STORAGE BASIN

NO SCALE



BRINE MEASURING TANK

NO SCALE